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AMSTATNEWS

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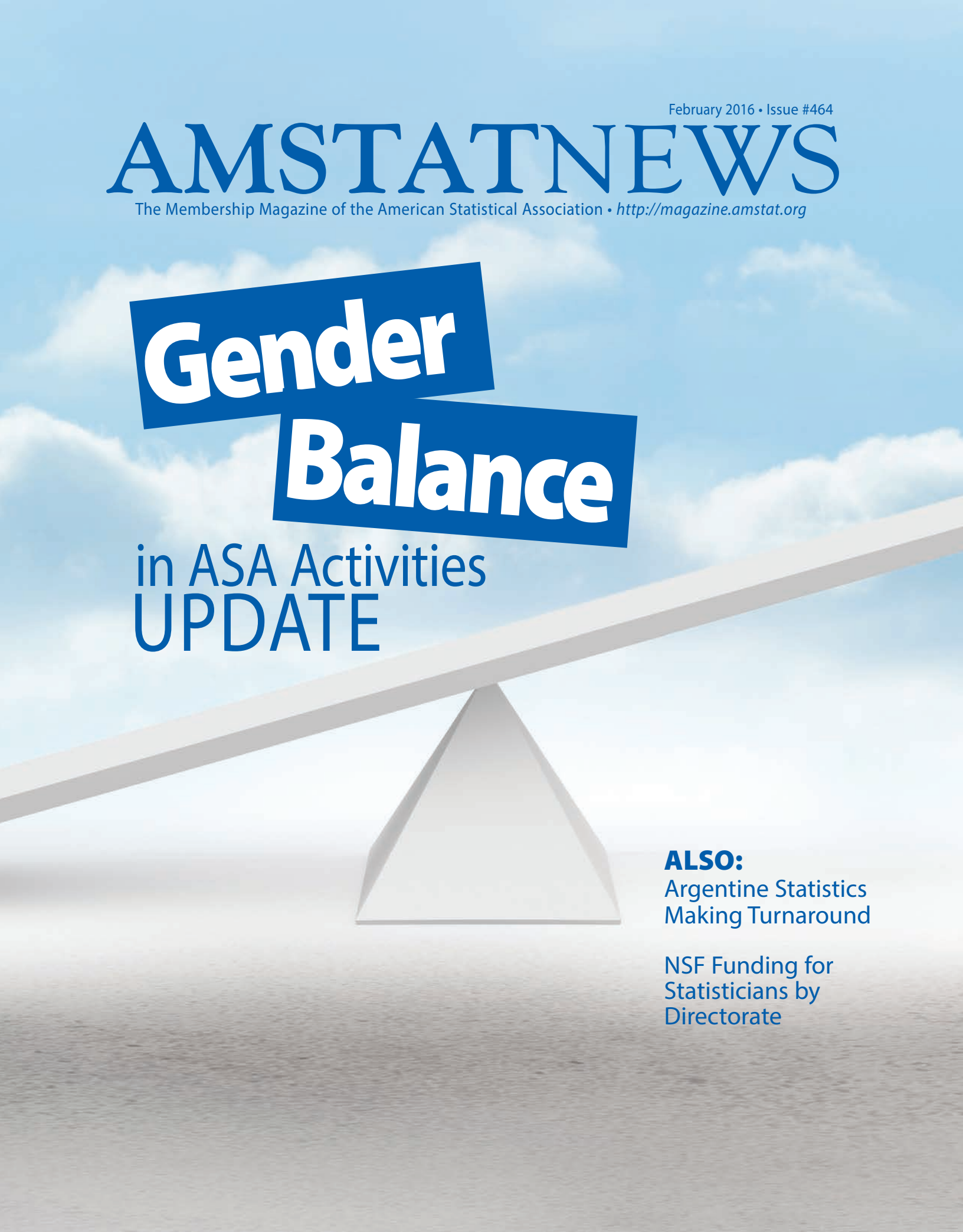

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Amstat News welcomes news items and letters from readers on matters of interest to the association and the profession. Address correspondence to Managing Editor, *Amstat News,* American Statistical Association, 732 North Washington Street, Alexandria VA 22314-1943 USA, or email *amstat@amstat.org*. Items must be received by the first day of the preceding month to ensure appearance in the next issue (for example, June 1 for the July issue). Material can be sent as a Microsoft Word document, PDF, or within an email. Articles will be edited for space. Accompanying artwork will be accepted in graphics file formats only (.jpg, etc.), minimum 300 dpi. No material in WordPerfect will be accepted.

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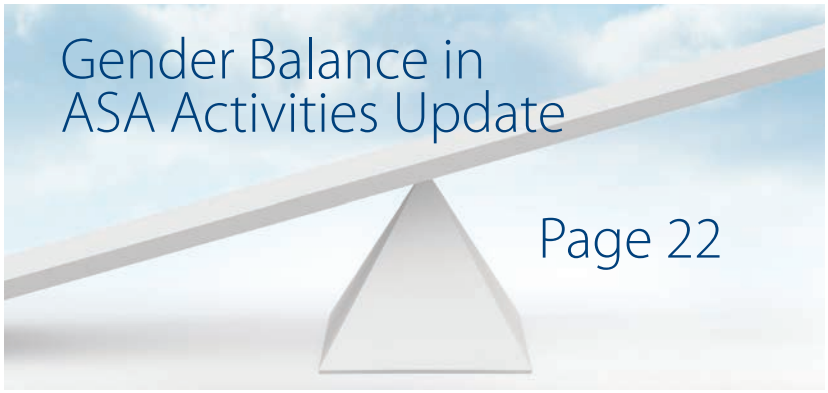
The American Statistical Association is the world's largest community of statisticians. The ASA supports excellence in the development, application, and dissemination of statistical science through meetings, publications, membership services, education, accreditation, and advocacy. Our members serve in industry, government, and academia in more than 90 countries, advancing research and promoting sound statistical practice to inform public policy and improve human welfare.

features



columns

This column is written to inform ASA members about what the ASA is doing to promote the inclusion of statistics in policymaking and the funding of statistics research. To suggest science policy topics for the ASA to address, contact ASA Director of Science Policy Steve Pierson at *pierson@amstat.org.*

STAT*tr@k* is a column in *Amstat News* and a website geared toward people who are in a statistics program, recently graduated from a statistics program, or recently entered the job world. To read more articles like this one, visit the website at *http://stattrak.amstat.org*. If you have suggestions for future articles, or would like to submit an article, please email Megan Murphy, *Amstat News* managing editor, at *megan@amstat.org*.

Nominations Wanted

The Committee on Excellence is Statistical Reporting Award (ESRA) in accepting nominations for its 2016 award. This award is unique because the winner is not necessarily a statistician, but a member of the media who has presented the science of statistics and its role in public life, thereby contributing to the discipline significantly. The winner will be recognized during the Sunday evening awards ceremony at the 2016 Joint Statistical Meetings in Chicago.

Award details, including information about submitting a nomination and the nomination form, can be found at *http://www.amstat.org/awards/excellenceinstatisticalreportingaward.cfm*.

Nominations are being accepted for the ASA Mentoring Award. The award honors those people recognized by their colleagues for their sustained efforts over a long period supporting the work and developing the careers of statisticians.

Nominations are due March 1 and should include a nomination letter, a CV, and up to two letters of support, as well as the names of 4-10 mentees representing the career span of the nominee.

The award is presented at the Joint Statistical Meetings in August.

Details can be found at *www.amstat.org/awards/mentoringaward.cfm*.

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Appreciating and Promoting the Importance of Statistics Around the World

From left: M. Ataharul Islam, Tamjida Hanfi, Jessica Utts, and Fariduzzaman Rana return from a tour of BRAC-sponsored health, microfinance, and education projects in the Korail slum, Dhaka, Bangladesh. The vice chair of BRAC, the largest NGO in the world, is Dhaka Statistics alumnus Mushtaque Chowdhury, who organized the tour.

Here is a quiz for those of you who are statistics history buffs. What university has a statistics department that was founded in 1950, was visited by the founder's friend R.A. Fisher, has sponsored multiple international conferences, has distinguished alumni around the world, and has an affiliated institute that publishes a statistics journal? If you think the answer is a large public university located on the East Coast or in the Midwest of the United States, then you are about 8,000 miles off base. The answer is the University of Dhaka in Bangladesh, where the department of statistics was founded by Qazi Motahar Husain in 1950 and renamed the department of statistics, biostatistics and informatics in 2008.

I had the privilege of giving a keynote address on behalf of the ASA at the second annual conference of their alumni association (*www.dusdaa.org*), held at the University of Dhaka at the end of December. I was delighted to learn about their distinguished history and to meet some of their highly accomplished alumni.

Prior to the conference in Bangladesh, I gave a keynote address at the 2015 International Indian Statistical Association Conference (*http://intindstat.org/IISA2015)* in Pune, India. The department of statistics at the Savitribai Phule Pune University has a distinguished history as well. It was founded as a joint mathematics and statistics department in 1953 by statistician V.S. Huzurbazar, who in addition to leaving the legacy of a large statistics department (which separated from mathematics in 1978), has left the legacy of two daughters who are accomplished statisticians!

Both conferences reminded me that statistics truly is an international discipline (with about 1 out of 9 ASA members living outside the United States), and that the opportunities and challenges for statisticians are similar across the globe. On my last day in Bangladesh, I met with a few dozen Bangladesh statisticians to discuss mutual concerns. I was struck by how similar their concerns are to those I hear elsewhere. How can we revamp statistical education to make sure our students fit with the current job market? How can we provide better mentoring for students and help them publish their work in the best outlets? How can we provide retraining for statisticians who received their education long ago, especially those who are not in academia? How do we balance our interests in theory, applications, data analysis, and computing—without losing sight of either our foundations or our future? How do we help

Jessica Utts

Holding the conference program during the opening ceremony of the International Indian Statistical Association Conference are (from left) D. D. Hanagal, Jessica Utts, W. N. Gade, Soumendra Lahiri, B. K. Kale, and R. V. Latpate.

Jessica Utts with 2010 ASA President Sastry Pantula (right) and Kazi Md Farhad Mahmud, a member of the Dhaka Conference Organizing Committee

MORE ONLINE
To see photos of the IISA and DUSDAA meetings, visit *www.ics.uci.edu/~jutts/Dec2015Photos.*

educate the public, government officials, and policymakers about the importance of statistics and the need for reliable data when making decisions? I heard one additional concern: How can we get statisticians more passionate about being involved in the increasingly data-driven efforts to improve conditions in developing countries? I hope to elaborate upon this theme in a future column, but welcome suggestions in the meantime.

At both conferences, I discussed why statistics is important in daily life, and then provided a description—tailored to each audience—of some of the ASA's programs and activities. The more I talked, the more convinced I became that we are too modest about what we have to offer as a profession. In future columns, I plan to highlight some of the outstanding resources available through the ASA and our partner organizations. But, here, I'll focus on two simple examples illustrating why I think statistics can help everyone in their daily lives.

A few months ago, I succumbed to peer pressure and purchased a personal fitness device. One of its features is that it purports to measure how many hours I sleep every night. I receive a weekly report, but it does not provide daily values; rather, it provides an average for the week. Last week's report told me I slept an average of 3 hours and 14 minutes a night. Of course, I know that isn't correct, and I know the explanation, which is that I only wear the device at night about half the time. How the values were obtained is one of the most important considerations in interpreting the results of any data analysis. But are we training our students to think about data quality? Perhaps it's obvious when the results are so disparate from what's expected, but what about when they are not? For instance, what if I wore it 6 out of 7 nights? And what about the emerging plans for having data on things like our driving habits automatically reported to insurance companies? Will those responsible for interpreting the results understand the importance of data quality?

As another example, suppose you are given the opportunity to buy an extended warranty for a new car you are purchasing. Should you buy it? On average, the company wins. But knowledge about individual variability plays an important role. Some consumers will win, and some will lose. Each person needs to figure out the likelihood of falling into those two categories. If you park in a garage, rarely drive in rough conditions, live far from a dealer (and would prefer to go to a local mechanic), don't have teenagers driving the car, and can afford to fix something if it goes wrong, then you are likely to be a loser if you buy the warranty. Understanding the difference between long-run average (consumers lose) and individual circumstances (some consumers win and some lose) is important in making a decision in this kind of situation. I don't think we are doing a very good job of teaching our students this, though, because when I recently purchased a car, the dealer was amazed that I refused to buy the extended warranty and told me I was the first person in a long time who had refused!

Also highlighted in my talks were some of the many wonderful resources the ASA has made available for promoting the understanding and importance of statistics. Two of these resources that all ASA members should know about are Stats.org (*www.stats.org*), which provides information and examples for journalists and the public to help understand statistics in the news, and This Is Statistics (*http://thisisstatistics.org*), which provides insights about careers in statistics for students and those who help them make career decisions. Promote these, and promote the importance of statistics!

Jessica Utts

New Book Series on Statistical Reasoning in Science and Society Launched

Editors call for proposals

The American Statistical Association recently partnered with Chapman & Hall/CRC Press to launch a book series called the ASA-CRC Series on Statistical Reasoning in Science and Society (see *www.crcpress.com/go/asacrc*).

"The ASA is very enthusiastic about this new series," said 2015 ASA President David Morganstein, under whose leadership the arrangement was made. "Our strategic plan includes increasing the visibility of our profession. One way to do that is with books that are readable, exciting, and serve a broad audience having a minimal background in mathematics or statistics."

The editors—Nicholas Fisher, Nicholas Horton, Deborah Nolan, Regina Nuzzo, and David Spiegelhalter—also shared their excitement about and perspectives for the series.

"As a profession, we need to be far, far better at explaining, in plain language, how what we do is important in improving people's lives," Fisher said. "Like it or not, our lives are full of uncertainty, and statisticians can help manage this uncertainty, even if it can't be eliminated completely. How to get better weather forecasts—or election forecasts, for that matter—how to interpret opinion polls or ratings of colleges or DNA matches in criminal trials, how to recruit a new player for a ball club, …—these are all situations where statisticians make vital contributions. This series of books describes in a simple, non-technical way how statisticians approach these and other problems, and how they make a difference."

"Statistics is sexier than ever," Nuzzo said. "There's a huge audience of readers who are hungry to learn more, but are daunted by math and statistical jargon. At the same time, we have statisticians who are great storytellers and can make complicated ideas clear and relevant. The time is ripe for this series."

"Our aim is for statisticians to tell stories about real-world problems," Nolan added. "Each story will capture the excitement of recent developments in a key field. Problems and questions take the front seat, and statistics plays a vital supporting role. These stories will be short and fun to read."

There's a huge audience of readers who are hungry to learn more, but are daunted by math and statistical jargon.

"Statistics is the science of learning from data," said Horton. "A flood of data permeates our lives and helps us to make better decisions. These books will allow a wide audience to understand more about the world around them in an accessible fashion."

"There has never been a greater need for understanding what statistics can—and can't—achieve," said Spiegelhalter. "I am so pleased to be involved in this series."

The Chapman & Hall/CRC press release states the book series will do the following:

- Highlight the important role of statistical and probabilistic reasoning in many areas
- Require minimal background in mathematics and statistics
- Serve a broad audience, including professionals across many fields, the general public, and students in high schools and colleges
- Cover statistics in wide-ranging aspects of professional and everyday life, including the media, science, health, society, politics, law, education, sports, finance, climate, and national security
- Feature short, inexpensive books of 100–150 pages that can be written and read in a reasonable amount of time

The editors welcome book ideas. Contact one of them or send an email to *asacrc@crcpress.com*.

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Staff Spotlight: **James Earle**

James Earle fishes on the shore of Lake Champlain in upstate New York, his preferred refuge from civilization.

Hey, everyone! I'm the ASA's new marketing and communications coordinator. I work on our emails and online content, such as *Amstat News* and STAT*tr@k,* and I help promote the ASA's events and initiatives. There's so much going on here, and it's wonderful being part of it and learning about this community.

I was born and raised in Massachusetts, just south of Boston, and studied biochemistry at the University of Massachusetts Amherst before realizing halfway through the program I was more excited to talk about research than to be in the lab. A few years later, I walked away with a degree in political science and I have been working in organizing and communications for nonprofits ever since.

My previous work was in politics, but it was your work as statisticians and data scientists that lured me to the ASA. Statistics and data science are driving national conversations about government, industry, and culture, so it's a privilege to help get more people engaged in those conversations by promoting the practice and profession of statistics.

I have lived in Washington, DC, for two years with my longtime partner and high-school sweetheart, Jaclyn, plus our cat, Camille (who thinks she's a dog). I spend most of my time at home binge-watching shows and comedy specials on Netflix, playing video games, planning the next weekly D&D session, and attempting to renovate the house.

When I want to get away from the city, I'll zip off to a cabin in the woods of upstate New York on Lake Champlain, or I'll go for a hike in the Berkshires and White Mountains of New England. I'm looking into making the Blue Ridge Mountains my new stomping ground, though—the central Appalachians are gorgeous. My fondness for hiking, running, and rowing also help me justify a hopeless infatuation with cheese, wine, and cooking large meals.

I look forward to meeting many of you at JSM 2016 in Chicago, but if you want to say hello now, you can find me on Twitter @James_Amstat or email me at *james@amstat.org*. I still have much to learn about statistics and the ASA, and I couldn't ask for better teachers than you all in the ASA community! ■

Awards

The ASA's extensive awards program recognizes statisticians who have made outstanding contributions through research, teaching, consulting, and service to the association and statistical profession.

The deadlines to nominate a colleague for many of these awards occur from December to March.

Visit *www.amstat.org/awards/awardsscholarships.cfm* and nominate a colleague today!

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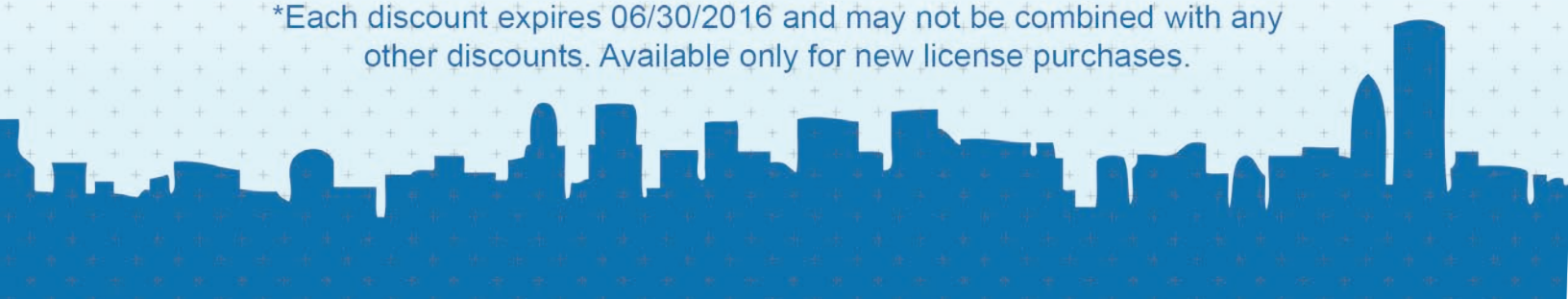

Argentine Statistics Making Turnaround

Graciela Bevacqua back in leadership position

Within days of a new government, Graciela Bevacqua was announced as the technical director for the Argentine National Institute of Statistics and Census (INDEC), the agency from which she was fired in 2007 under the previous government for defending the integrity of INDEC inflation data.

The move is one step closer to vindication for Bevacqua, who in 2011 was charged with both criminal and civil fines for producing independently developed price indexes. The two civil fines have been revoked, but the criminal charge remains to be resolved after the appeal of a ruling in Bevacqua's favor.

Jay Kadane, praised the most recent news: "I'm delighted to hear of Graciela's reinstatement at INDEC and that her long ordeal of harassment and human rights violations by the Argentine government is nearly over. She has had to endure a lot, for which the statistical community owes her a great deal of gratitude in her steadfast defense of freedom of the press and the integrity of government statistics."

The American Statistical Association, with the leadership of its Committee on Scientific Freedom and Human Rights (CSFHR), was active in advocating for Bevacqua and her colleagues because of ASA's stances on scientific freedom and its strong statements for the necessity of objective and independent government statistics. The troubling situation and the ASA's work to address it are described in *Amstat News* in "Politics and Statistics Collide in Argentina" (see *http://magazine.amstat.org/blog/2012/12/01/argentinastatistics)* and *Significance* in "A Life in Statistics: Graciela Bevacqua" (see *http://bit.ly/1IZpesd*). The *Significance* article describes the extent of the harassment by the Argentine government upon Bevacqua.

In an email to the ASA, Bevacqua expressed her happiness over her return to INDEC and noted the challenges that lie ahead.

Among the challenges ahead, according to Jean-Louis Bodin, the Argentine laws on official statistics are obsolete and therefore not able to protect the independence of the statistical system. Bodin also that passing a new law will be difficult because the supporters of the previous President of the Nation, Cristina Kirchner, still have a slim majority in the congress. Bodin—former president of the International Statistical Institute, an ASA fellow, and one of the main drafters of the UN Resolution on Fundamental Principles for Official Statistics—has been one of the leaders in defending the integrity of Argentine statistics through, for example, two visits in 2009 and 2010 to support Bevacqua and her colleagues.

Another challenge will be to produce credible and reliable economic statistics again. Soon after the December announcement of changes in INDEC's senior leadership, Bloomberg news reported that INDEC will delay the publishing of its economic indicators after the new directors found the agency "in a state of deterioration and lacking qualified staff." (See *http://bloom.bg/1Ry6inx*) Bloomberg quoted Bevacqua: "We can reveal what we suspected, which is that we found a consumer price index that had been completely dismantled. There's no supervision, which means we will have to fill the positions with qualified people." ■

Committee on Scientific Freedom and Human Rights Concerned About New Dubai Statistics Law

The Dubai government issued a new law November 25, 2015, on the Dubai Statistics Center that purportedly "aims to develop and enable the center to establish an advanced statistics system in the emirate." (See *http://bit.ly/1OLTPda*)

Drawing concern from the ASA Committee on Scientific Freedom and Human Rights (CSFHR), the law prohibits any private entity from conducting "any survey without obtaining authorization from the center, and such authorization is subject to the center's approved policies and procedures." Given the apparent desire by the Dubai government to control private sector statistics, CSFHR is also concerned about whether the Dubai Statistics Center will have the independence and autonomy necessary to issue objective, credible statistics.

Indeed, Jay Kadane, 2013–2015 chair of CSFHR, warned of possible consequences of the new law in *The National*, a prominent United Arab Emirates newspaper, that the new law would likely lead to the spread of "uninformed rumors and uncertainty about the extent of the downturn [in Dubai's property market]. This will do far more harm to Dubai's economy than allowing private surveys to be conducted and published. International investors, in particular, are sensitive to the quality of the information available to them in deciding where to invest."

CSFHR is gathering information about the law and will continue to monitor the situation.

ASA LEADERS REMINISCE

Katherine K. Wallman

Jim Cochran

Katherine K. Wallman serves as chief statistician at the United States Office of Management and Budget. She provides policy oversight, establishes priorities, advances long-term improvements, and sets standards for a federal statistical establishment that comprises more than 100 agencies spread across every cabinet department.

Wallman represents the U.S. government in international statistical organizations, including the United Nations and Organization for Economic Cooperation and Development. During her tenure, Wallman has increased collaboration among the agencies of the U.S. statistical system, fostered improvements in the scope and quality of the nation's official statistics, strengthened protections for confidential statistical information, and initiated changes that have made the products of the system more accessible and usable.

Prior to 1992, Wallman served for more than a decade as executive director of the Council of Professional Associations on Federal Statistics. She also worked in the Office of Federal Statistical Policy and Standards and the National Center for Education Statistics.

Wallman—twice honored as a Presidential Meritorious Executive—is an elected member of the International Statistical Institute, a fellow of both the American Statistical Association and American Association for the Advancement of Science, and a founder member of the International Association for Official Statistics. In 1992, she served as ASA president, and, in 2007, she was honored with the association's Founders Award.

Wallman has been honored with the Robert G. Damus Award for significant, sustained contributions to the integrity and excellence of OMB (2009) and the Population Association of America's Excellence in Public Service Award (2011). At the international level, Wallman served as chair of the UN Statistical Commission during 2004 and 2005; as chair of the Conference of European Statisticians, UN Economic Commission for Europe, from 2003 to 2007; and as a vice chair of the Statistics Committee, Organization for Economic Cooperation and Development from 2009 to 2011.

In the fourteenth installment of the Amstat News *series of interviews with ASA presidents and executive directors, we feature a discussion with 1992 ASA President Katherine K. Wallman.*

Q You have served both as chair of the United Nations Statistical Commission and chair of the Conference of European Statisticians for the United Nations Economic Commission for Europe. In these roles, how did you and other members of this commission interact with the other four regional commissions of the United Nations Economic and Social Council—the Economic Commission for Africa (ECA), the Economic and Social Commission for Asia and the Pacific (ESCAP), the Economic Commission for Latin America and the Caribbean (ECLAC), and the Economic and Social Commission for Western Asia (ESCWA)? What steps were taken to advance the application of statistics to encourage economic growth and improvement of the quality of life in the nations represented by the ECA, ESCAP, ECLAC, and ESCWA? What have been the ramifications of these actions?

A Working with colleagues in the international community has been one of the more unique and most rewarding opportunities of serving as U.S. chief statistician. A little-known fact is that the United Nations Statistical Commission was one of the original bodies of the UN at its founding. Another little-known fact, I'm sure, is that the first U.S. chief statistician, Stuart Rice, chaired the *nuclear session* of the UN Statistical Commission in 1946. When I first attended the commission in 1993, the then-chair referred to me as *the lady statistician*—a distinction that has disappeared as more women have become chief statisticians in their respective countries …

The UN Statistical Commission brings together the chief statisticians from member states from around the world. It is the highest decision-making body for international statistical activities, especially the setting of statistical standards and the development of concepts and methods and their implementation at the

national and international levels. The UN Statistical Commission is responsible, among other things, for the following:

- Promoting the development of national statistics and the improvement of their comparability, including concerted technical cooperation efforts to assist the developing countries in strengthening their statistical systems
- Coordinating statistical activities and methodological development to achieve an integrated system in the collection, processing, and dissemination of international statistics
- Advising the organs of the United Nations on general questions relating to the collection, analysis, and dissemination of statistical information

I must admit that when I first attended the commission in 1993—literally some six weeks after taking on the U.S. chief statistician role—I was struck by the fact that the commission felt like it was two separate events. One event for the developed economies, whose chief statisticians were more focused on creating more complex methods such as for national accounting, and the other for the developing economies, who were most focused on building core statistical capabilities in their respective nations. But through the commission itself, and particularly through the regional commissions, these gaps were substantially bridged.

The most fundamental interaction between the commission, the Economic Commission for Europe (ECE), and the other four regional commissions was and continues to be through technical cooperation missions, providing experts to assist in building statistical capacity at the country level. Less well known, I imagine, is the example that the ECE provided for other regional commissions striving to strengthen their effectiveness. Particularly strong have been the collaborations of statisticians in the ECE with those in ECLAC and ESCAP. Through their shared culture as statisticians, they have been quite successful in bringing the Fundamental Principles of Official Statistics to the establishment and improvement of statistical services in many countries.

Q In serving as chief statistician of the United States since 1992, you have been responsible for coordinating, guiding, and overseeing the federal statistical system of the United States for almost a quarter century. How has the role the chief statistician and the Office of Management and Budget play in the federal statistical system evolved since you first became chief statistician?

Wallman

A When I became chief statistician in December 1992, the role of the office had already undergone a major evolution—in particular, whereas the office back in the day had comprised a substantially larger cadre of statisticians, there was but a handful of professionals by the time I took over. The principal difference was that the experts responsible for our portfolio of statistical classifications—notably occupational and industry classification systems, as well as those for metropolitan statistical areas, data on race and ethnicity, and others—were no longer on the staff at OMB. During the last 25 years, OMB has called upon agency experts to carry out much of the developmental work related to statistical methods and standards, including the classifications. In addition, whereas the Statistical Policy Office historically had performed the *information collection review* function for all federally sponsored inquiries, this responsibility has been decentralized to other OMB staff.

We remain, as always, centrally involved in the development of the president's budget for statistical programs and in the review and approval of all statistical surveys promulgated by federal government agencies. The biggest change, I would argue, is that these changes have allowed the chief statistician and OMB to shift from a *transaction-oriented* focus to one that allows more attention to longer-term priorities. For example, in the last several years, we have invested in issuing principles for statistical agencies, information quality standards, updated methodological standards, data dissemination standards, statistical confidentiality and statistical data sharing guidance, and administrative record use guidance.

Q The federal statistical system of the United States is comprised of 13 principal statistical agencies. In this manner, the United States differs from countries such as Sweden, Canada, South Africa, and Australia that maintain primary

statistical agencies. What are the advantages to the U.S. approach to its federal statistics system? During your term, what has been the most substantial change in the way agencies collaborate in the decentralized U.S. statistical system? What is the major impediment to interagency cooperation and collaborations that we still face?

A You will not be surprised to learn that this is a question I have been asked more than once—including by Queen Beatrix of the Netherlands! The primary, oft-cited advantage is that the statistical offices in our country are more closely attuned to the issues and challenges in their respective domains—be they in health, education, criminal justice, transportation, etc. What may be less well understood is that centralization is really a continuum, not an either/or arrangement. As a result, in many centralized systems, the statistical agency is not actually in charge of statistics in various ministries responsible for health, education, criminal justice, transportation, etc. Not infrequently, the principles, policies, standards—and the resources to support the statistical programs—are not applicable to these ministries or are not enforceable by the central statistical office.

With respect to interagency collaboration over the past 25 years, I would offer that it has increased substantially as agencies face more common challenges. These have ranged from meeting common resource constraints to embracing new technologies to addressing declining response rates to facing cyber-security realities to updating concepts that underlie the collection of data and the production of economic and demographic statistics. In each of these cases and more, the agencies have welcomed the opportunity to learn from one another and join together to explore options and develop solutions.

In my experience, the major impediment to further collaboration continues to be the language of different agencies' authorizing statutes—or in the interpretation of those statutes—which make seemingly reasonable approaches to data sharing or cost sharing difficult, if not impossible.

Q In his 2011 proposal to reorganize the U.S. Department of Commerce, President Obama recommended consolidation of several federal statistical agencies. What specific changes to the federal statistical system did President Obama propose, and how would these changes foster increased interagency cooperation and collaboration?

A The proposal you reference appeared in the president's FY 2013 budget as part of an initiative to consolidate the government's core trade and competitiveness functions into a new department with a focused mission to foster economic growth and spur job creation. Statistical agency consolidation was one of a number of proposals under this initiative that would have been considered if the Congress had granted authority to the president to carry out such reorganizations on an expedited basis. That authority was not granted.

Under the proposal, the four statistical agencies that would have been considered for consolidation were the Census Bureau, the Bureau of Economic Analysis, the Bureau of Labor Statistics, and the National Center for Science and Engineering Statistics (NSF).

The theory was that—over the longer term—this consolidation might result in some cost-efficiencies, as well as in better sharing, particularly of business establishment data, a continuing challenge under current organizational arrangements (in particular because business tax data are co-mingled with census economic data). Suffice it to say that even if the reorganization authority had been granted by the Congress, there would have been further hurdles to jump to achieve the potential centralization.

Q Twenty-one years ago, seven federal agencies, including the United States Office of Management and Budget, jointly created the Federal Interagency Forum on Child and Family Statistics. What activities does this forum undertake to achieve its goals of collecting enhanced data on children and youth, improving the communication of information on the status of children to the policy community and the general public, and producing more complete data on children at the federal, state, and local levels?

A As noted earlier in this interview, there has been considerable growth in interagency collaborations over the past two decades. The Federal Interagency Forum on Child and Family Statistics is an excellent example. Founded by seven agencies, the forum now counts more than 20 agencies as members.

The impetus for the forum was that despite having many agencies collect data on various aspects of children's lives—such as health and safety, education and employment, and housing and nutrition—there was no *National Center for Child Statistics*, and therefore no *portrait of children* cutting across their experiences. The forum's first—and now longstanding—accomplishment was to produce such a portrait in an annual report, incorporating a number of indicators across domains. Production of that report, *America's Children: Key National Indicators of Well-Being,* highlighted key measures for children

North American Industry Classification System (NAICS) Concordance signing, from left: Steve Landefeld, then Bureau of Economic Analysis director; Marty Riche, then U.S. Census Bureau director; Ivan Fellegi, then chief statistician of Canada; Katherine Wallman; and Antonio Puig, INEGI (Mexico)

and their families. The report continues to serve as a reliable resource for the policy community and general public, providing accurate data on timely and relevant topics. To enhance communication with its stakeholders, the forum has continued a practice of inviting academic researchers, policymakers, and other friends of the forum to its annual meetings, providing opportunity for sharing pertinent survey findings and updates on new and innovative research methods.

The America's children report also underscores several data challenges, a number of which have been taken on by the forum. For example, through the forum, the agencies have worked to use more comparable age-breaks, racial/ethnic breakouts, and the like in collecting and publishing their data. Notably, the forum's work has served to identify critical gaps in data on children, such as children of incarcerated parents, early childhood development—particularly within the domain of social/emotional development—long-term poverty, disability, and social connections and engagement. A repository of national-level data, the forum responds to key data interests and data needs, such as the recent administration initiative My Brother's Keeper. Forum agencies also independently produce state- and local-level data that can be accessed through the forum's website, *childstats.gov.*

Q What was the most interesting issue you faced during your term as president of the ASA? How did you resolve this issue?

A If you'll allow me, I'd like to mention two quite different issues we confronted. The more divisive was the matter of the ASA and accreditation of statisticians. I'd like to say there were two distinct camps, but I'm not sure that would be an accurate portrayal. On the one hand, there were academic statisticians, who seemed to feel for the most part that their advanced degrees and faculty positions should speak for themselves. On the other hand, there were consulting statisticians, who seemed most eager to have a *Good Housekeeping* Seal of Approval to add to their credentials. There, the seeming clarity of positions ended. Government statisticians, as I recall, were divided—some for, some against. And then there was an overlay of those who—regardless of their chosen sector—thought that the American Society for Quality Control or some other organization would put the ASA out of business if we didn't take this role. The solution, as I recall, was to have a pilot program in which a few of our members would submit their credentials for review, and then offer a totally voluntary portfolio-based accreditation opportunity.

More fun, from my perspective, was engaging the arguably learned society ASA in my hopes for an initiative to enhance children's statistical literacy. Aside from Fred Mosteller's fair challenge—*So what about those over 30 and in need?*—I am pleased to say the ASA took this on in ensuing years. My big gamble was having our ASA Quantitative Literacy colleagues, led by Jim Landwehr, be my president's invited address feature. I shall always remember that ballroom full of learned statisticians counting—and prohibited from eating—their M&Ms! More lasting, in my view, are the Census at School, Meeting within a Meeting, and other ongoing pre-college initiatives of our association. ■

SNEAK PEEK
Return to this column next month when we will feature an interview with 1995–2001 ASA Executive Director Ray A. Waller.

NSF Funding for Statisticians by Directorate

Opportunities across directorates

Steve Pierson, ASA Director of Science Policy

Statisticians receive funding from across the National Science Foundation (NSF) but, because it is not straightforward to find out the funding by directorate, the ASA sought to estimate this funding.

By examining the department listed in all active NSF awards as of February 2015, we obtained the estimates in Table 1 of funding for statisticians by directorate for that time period. The table—the amounts for which were obtained by dividing the total award amount by duration in years—shows statisticians being primarily funded by the Mathematical and Physical Sciences (MPS) Directorate (home of the Division of Mathematical Sciences—DMS), followed by the Education and Human Resources (EHR) Directorate; the Social, Behavioral, and Economic Sciences (SBE) Directorate; and the Computer and Information Science & Engineering (CISE) Directorate.

Table 1— Approximate Annual NSF Funding by Directorate to Statisticians Based Largely on the Academic Department Listing of the Principal Investigator and Estimated from Active NSF Awards as of February 2015

Annual NSF Funding to Statisticians/Statistics Departments	
NSF Directorate	**$ Million**
Biological Sciences	0.95
Computer & Information Science & Engineering	3.36
Education and Human Resources	4.12*
Mathematical & Physical Sciences	20.61†
Social, Behavioral, & Economic Sciences	3.75
Engineering	0.22
Geosciences	0.12
Total	33.17

*$2.08 million of this amount is for a single award.
†$3.18 million of this amount is for the Statistical and Applied Mathematical Sciences Institute

With the amount of funding for (bio)statistics departments coming from outside MPS/DMS amounting to about 60% of the amount coming from MPS/DMS, it is important for statisticians to keep in mind the other directorates for funding opportunities, especially statisticians engaged in interdisciplinary research. The relatively small amounts of funding in the Biological Sciences, Engineering, and Geoscience directorates also may indicate unexploited opportunities for statisticians. (See sidebar for advice about applying for funding outside DMS.)

The funding levels in Table 1 represent 350 awards and are likely to be lower bounds for NSF funding for statisticians at that time since they generally do not include funding to statisticians who are not in statistics-centric departments. (The levels also assume all PIs in statistics departments are statisticians.)

In the data provided to the ASA, there were 93 department

categories—representing 625 awards—that included "statistic." The main department listings included in Table 1 are statistics, biostatistics, biostatistics and statistics, and statistical science. The rest of the 93 listings are a combination of statistics or biostatistics and one—or two—of the following: mathematics, informatics, actuarial science, computer science, applied mathematics, and operations research.

To elaborate, 286 of the 350 awards were to PIs belonging to departments where "statistics" was in the listing, 20 for biostatistics, and 14 for statistical science. For comparison, some 100 awards had department listings of "mathematics and statistics" and around 1,600 for both "mathematics" and "computer science." ■

Tips for Applying for Funding Outside the NSF Division of Mathematical Sciences

- Keep in mind the DMS Mathematical Sciences Innovation Incubator program (see *http://bit.ly/1laVnBx*), whereby mathematicians and statisticians applying to NSF non-DMS solicitations make DMS aware of the solicitation. The application would support a new collaboration area, DMS will consider the application for co-review and co-funding.
- Call solicitation program officers to discuss your proposal idea.
- Review awards funded by a solicitation/program, including details such as dates and amounts.
- Do not torque your research beyond a reasonable point; there may not be a perfect fit, but one needs to find the best and most reasonable fit.
- Look for explicitly interdisciplinary solicitations.
- Apply as part of interdisciplinary teams.
- For newer faculty, form deep and meaningful collaborations with domain area scientists early in your career. This means working in partnership with scientists to develop statistical solutions to their most pressing problems (versus simply getting a data set and proposing to analyze/develop new statistical methods for the data set.)

Intro to STATS

The *ASA Curriculum Guidelines for Undergraduate Programs in Statistical Science* (see *http://bit.ly/1J1tDek*) states, "Institutions need to ensure students entering the work force or heading to graduate school have the appropriate capacity to 'think with data' and to pose and answer statistical questions." The guidelines also note the increasing importance of data science.

While the guidelines were explicitly silent about the first course, they do state the following:

- "A focus on data [should] be a major component of introductory and advanced statistics courses and that students work with authentic data throughout the curriculum."
- "A number of data science topics need to be considered for inclusion into introductory, second, and advanced courses in statistics to ensure that students develop the ability to frame and answer statistical questions with rich supporting data early in their programs, and move towards dexterous ability to compute with data in later courses."

With a year having passed since the release of the guidelines and data science programs and courses burgeoning across the United States, *Amstat News* asked several educators about how they were changing their intro stats courses so students have "appropriate capacity to 'think with data'."

Photo courtesy of Jim Gipe

Ben Baumer is an assistant professor in the program in statistical and data sciences at Smith College, serving as the program's director. Baumer spent nine seasons as the New York Mets' statistical analyst for baseball operations and is a co-author of *The Sabermetric Revolution: Assessing the Growth of Analytics in Baseball.*

Describe the introductory statistics course(s) you teach.

At Smith, introductory statistics courses are offered through four departments in addition to ours (psychology, economics, government, and sociology). I teach our introductory statistics course, which is for students with prior exposure to calculus. Most of my students are majoring in the sciences, with a large majority coming from engineering, biology, neuroscience, and environmental science. All those majors require this course. Students get five credits for the course, since there is a required lab meeting in addition to the three regular lecture meetings. The use of R is integrated throughout the course, but the labs provide a comfortable environment for coding that offers one-on-one and peer-to-peer instruction. We use the OpenIntro through randomization and simulation textbook. Most of the traditional topics are covered, but the curriculum emphasizes randomization and simulation, regression modeling, and statistical computation.

What do you see as your biggest challenge as an instructor of an introductory statistics course?

Creating a student who is capable of performing coherent statistical analysis in a single semester course is challenging. We spend a fair amount of time discussing topics that may not be as useful as they once were (e.g., *t*-tests, inference for a single proportion, chi-squared tests) and not enough time building skills students are likely to use in their future research (e.g., a deeper understanding of regression, logistic regression, data visualization, and data wrangling skills).

How are you adapting your introductory course(s) in light of the new ASA guidelines and the emergence of data science?

In the short term, I have pushed more data science elements into the course. In addition to the "mosaic" package for R, we are now using Hadley Wickham's "dplyr" package in our labs. The idea behind this is that students will hopefully develop some familiarity and comfort with basic data wrangling skills in R such that they can build on these skills in future courses and research. I try to always use real data and emphasize modeling.

In the medium term, I plan to explore the possibility of modernizing the curriculum.

What technology do you use in the classroom?

R. We have an RStudio server set up for the students, and I use R pretty much every day in the lectures and, obviously, in the labs. I also use Google's office suite (but never Excel).

What is your favorite classroom activity for helping students "think with data"?

Andrew Bray and I adapted an exercise from Nick Horton for the first day of class that builds intuition about inference for categorical data through randomization. There is an episode of *MythBusters* that explores the question of whether yawning is contagious. The MythBusters conduct an experiment in which 50 participants are placed alone in a closed room and asked to wait. The response variable is whether they yawned. However, they were first randomly divided into two groups. In the experimental group, the experimenter yawns as they close the door to the room, and in the control group, they don't. The MythBusters conclude—without any inferential statistics—that because 29% of the participants in the experimental group yawned, but only 25% of those in the control group yawned, yawning is contagious.

What we then do is have the students use playing cards to simulate a randomization distribution for the number of participants in the experimental group who yawned. Of course, it's the first day of class and they don't know what any of this means, so we don't use all these words. But I hope that going through the exercise helps build intuition about statistical inference—both in terms of how it works but also why it's useful.

Are you assigning students real data in your course? If so, where do you get it? Do you prep it? What unique difficulties do the data pose, and how do you deal with them?

Students always use real data in their end-of-semester projects. Some students get data from other professors with whom they are working, but most find it on the Internet. Often, this involves various data wrangling challenges—almost always involving data cleaning and missing data, and often involving reshaping or merging. I always provide help, but try not to write code for them. The biggest challenges that come up in these projects that we don't cover in the course include data wrangling, what to do about missing data, how to model time series (or panel) data in regression, and logistic regression.

Johanna Hardin is professor and chair of the department of mathematics at Pomona College. She participated in creating the 2014 *ASA Curriculum Guidelines for Undergraduate Programs in Statistical Science* and recently co-edited an issue of *The American Statistician* focusing on the undergraduate curriculum (Vol 69, No 4).

Describe the introductory statistics course(s) you teach.

Introductory statistics at Pomona is taught using R with a focus on simulations to understand the mechanics behind traditional inference. Permutation tests serve as a way to understand ideas of sampling distributions and variability and as a mechanism for discussing when tests are more powerful and when assumptions are violated.

What do you see as your biggest challenge as an instructor of an introductory statistics course?

The biggest challenge for me is teaching about the importance of technical conditions (e.g., normality assumption, sample size) while still giving the students skills to make conclusions from data they will encounter in the future. A study that does not perfectly conform to ideal conditions does not necessarily warrant being thrown out. There is often still information hiding inside most data we encounter!

How are you adapting your introductory course(s) in light of the new ASA guidelines and the emergence of data science?

One of the biggest things I've tried to change in my classroom is incorporating dynamic data. That is, I want the students exposed to data that changes (i.e., is not static). Some examples of such data come from weather, sports, GDP, CDC, etc. Ideally, students will learn to download (often scrape) data sets from websites kept up to date by relevant institutions. In R, Hadley Wickham's "readr" package and Jenny Bryan's "googlesheets" package help students easily download many new types of data.

What technology do you use in the classroom?

The main technology I can't live without is RStudio. That means, of course, that we use R. With RStudio, students can produce assignments that combine code, results, and write-up in a reproducible and readable way. The mosaic package goes a long way toward easily navigating introductory statistics ideas within R. And even in introductory statistics, Shiny has been made user friendly enough to let students produce fantastic interactive graphics.

Additionally, I love using applets in class. Primarily, I use the Chance & Rossman applets that go along with *Introduction to Statistical Concepts, Applications, and Methods*. However, there has been some recent work done to recreate many of those applets using Shiny in RStudio.

What is your favorite classroom activity for helping students "think with data"?

At the end of my introductory course, I have often used Shonda Kuiper's TigerSAMPLING activity, which uses a video game framework to have students sample data from hypothetical tigers in a reserve. The students are able to think about sampling bias and generalizability while running a multiple regression on the observations.

Are you assigning students real data in your course? If so, where do you get it? Do you prep it? What unique difficulties do the data pose and how do you deal with them?

I use a lot of the data within *Introduction to Statistical Concepts, Applications, and Methods*—most of the data sets come from actual studies, and the studies are well documented within the textbook. I also use data scraped from the Internet. For example, students download data from Wikipedia and Gapminder. The biggest challenge is to get the students to think carefully about what constitutes a random sample or a randomized experiment—and, most importantly, what to do when most often the data do not come from any type of random process.

Mine Çetinkaya-Rundel is an assistant professor of the practice in the department of statistical science at Duke University. Her work focuses on innovation in statistics pedagogy, with an emphasis on student-centered learning, computation, reproducible research, and open-source education.

Describe the introductory statistics course(s) you teach.

I regularly teach two introductory statistics courses. One of them is STA 101, a large course (120 students) comprised mostly of social science majors and students who have not yet decided on a major. This is a noncalculus-based course that introduces students to statistics as a science of understanding and analyzing data. Students meet with me twice a week in a lecture setting (although lecturing is minimal in this team-based flipped course) and meet with the teaching assistants once a week for computational labs using R.

The other course I teach is an introductory data science course for a small group of students who self-select into a cluster of quantitative courses to take in their first semester at Duke. This course has a much heavier computational component than my other course, as well as a strong emphasis on data wrangling, visualization, modeling, and effective communication of results.

Both courses introduce statistical inference and modeling and use the R statistical computing language, but differ in focus and depth. For example, in STA 101, students are given custom functions for creating bootstrap intervals, while students in the data science course instead learn to write for loops and construct the bootstrap intervals themselves. Similarly, in STA 101, students are provided cleaned data sets to work with, while students in the data science course are asked to scrape data directly from the web and then clean it before performing any statistical analyses on it.

What do you see as your biggest challenge as an instructor of an introductory statistics course?

The biggest challenge in STA 101 is that the course has an ambitious curriculum for an audience that is primarily composed of students who enroll to meet a quantitative studies or major requirement, as opposed

to a pre-existing interest in statistics. Motivating these students to develop an interest in statistics can be difficult, particularly in a passive learning environment using traditional lectures. For the last few years, I have been teaching this course flipped and team-based, and while almost all students like the interactive nature of the course, the views on having to prepare outside of class and work with teammates on graded work are varied among the students.

The biggest challenge I face in my data science course is striking the right balance between the amount of class time spent on statistical and computational topics. I would like students coming out of this course to be well prepared for the next (regression) course in the major, which means they need to have a good grasp of foundational statistical concepts. Meanwhile, we also need to spend a substantial amount of class time introducing computational skills like merging and cleaning data sets, working with non-flat data, interactive visualizations, gathering data off the web, etc. I'm still tweaking the distribution of class time dedicated to these complementary, but separate, components of the course, and I likely will continue to do so as newer tools become available.

How are you adapting your introductory course(s) in light of the new ASA guidelines and the emergence of data science?

My data science course is only two years old, and it was designed with the new ASA guidelines in mind. I make a point of using only authentic data sets in both of my introductory courses. This helps immensely with student motivation, as they can immediately see real applications of methods they are learning. To align my STA 101 course better with the new ASA guidelines and the emergence of data science, I have been updating my computational labs to have a heavier emphasis on data wrangling and visualization. I am a huge fan of R packages like "dplyr" and "ggplot2" for accomplishing this ambitious goal with minimal lines of code and with syntax that reads more like plain English.

What technology do you use in the classroom?

For computation, I use R via RStudio. Instead of downloading and setting up software, students access RStudio server instances maintained by the university. This means I have complete control over software and package versioning. This approach has been an incredible time saver for getting started with computation and has definitely reduced student (and instructor) frustration. Reproducibility is a central theme for the computational labs, and hence students complete all data analysis using RMarkdown. While this might initially sound like one more thing they have to learn, it actually streamlines the data analysis process and makes it a lot easier for students to organize their work by keeping everything (code, output, and narrative) in one place.

Another technology I use and love are clickers for keeping my large STA 101 class actively engaged during lectures. Clickers have the added benefit of immediate two-way feedback on the students' understanding of specific concepts, which allows me to adjust my lesson plans based on the skills and needs of the students and allows them to gauge their own understanding. Times when a large proportion of students incorrectly answer a question provide the opportunity for peer instruction, in which students explain their thought process to their neighbors and often discover the source of their original error. This allows for students to be more engaged with the material and each other, and they continually assess their mastery of concepts and re-evaluate their understanding while still in class.

Building on the students' enjoyment of the interactive nature of this course, I have implemented team-based approaches that rely on a student-centric flipped-classroom structure. The course is "flipped" in the sense that content delivery happens outside of class via online videos. Each learning unit starts with a readiness assessment that students take individually (using clickers) and in teams (using scratch-off sheets). These assessments hold students accountable for the videos they are expected to watch before each unit. This frees up class time for higher-level learning and mastery of the material via problem-solving and deliberate practice. These activities encourage the students to work together and explain concepts to one another, which sparks thoughtful and passionate discussions and makes a dramatic improvement in both their attitudes and their engagement.

Since teamwork is a substantial component of my courses, I also think it is important to give students the opportunity to evaluate each other and provide constructive feedback so they are more effective teammates. I have recently started using an app called Teammates (*https://teammatesv4.appspot.com*) for the peer evaluations, and I love it. It is a bit tedious to set up at the beginning of the semester; however, it's pretty simple to copy the

MORE ONLINE
To view Çetinkaya-Rundel's most recent course web pages, visit *https://stat.duke.edu/courses/Fall15/sta101.002* and *https://stat.duke.edu/courses/Fall15/sta112.01*.

information going forward and run another evaluation session. The best feature is you can release anonymized feedback to students with the click of a button.

What is your favorite classroom activity for helping students "think with data"?

In both courses I described, I do a light introduction to Bayesian inference with a dice game. This activity is designed to get students to think about a prior belief, collecting data, putting these two pieces together to calculate a posterior probability, and then updating their prior in the next round with their posterior. Here is how the game works: I have two dice, one six-sided and the other 12-sided. A "win" means getting an outcome greater than or equal to four. Since the probability of "winning" (rolling ≥ 4) is higher with the 12-sided die, this is the "good die." I hold the six-sided die in one hand and the 12-sided die on the other hand, but the students don't know which is which.

We start with assigning prior probabilities to the two competing hypotheses:

H1: Good die is in my right hand

H2: Good die is in my left hand

Students quickly decide on P(H1) = 0.5 and P(H2) = 0.5, since they have no reason to assign non-equal probabilities to the two hypotheses. We also discuss that if they had additional information about me, like that I tend to favor my left over my right, perhaps it would be wiser to assign a higher probability to H2.

Then we move on to data collection. Students take turns asking me to roll the die on the right or the left. I roll and only tell them whether they won or lost, but I don't tell them the outcome. We also record their choice (right or left) and the outcome (win or lose) for each round on the board. The ultimate goal is to come to a class consensus about whether the "good die" is in my right or my left hand. They can choose to play as long as they want before they make a call; however, there is also a cost associated with playing too long (i.e., collecting too much data). I have a bag of candy and each time they "lose" (roll < 4), I take away one piece of candy. If they make the right decision at the end, we pass around the bag of candy. If not, they lose all the candy. Also, since not all students are motivated by candy, I tell them that if we take too long playing the game, we may not finish the material and that they will need to learn it on their own … Usually the class is ready to make a call after about 10 rounds of the game, and the students arrived at the correct answer each time we played the game.

Once the game is over and the candy bag is going around, we discuss how they made the decision. I ask them about how their belief changed after each round, and how that affected their decision to ask me to roll the die in my right hand or the left hand in the next round.

We then formalize this discussion with probability calculations. Using a probability tree, we calculate the posterior probabilities associated with the two hypotheses at the end of round one, and then show how we can update our prior beliefs for round two using the calculated posteriors from the first round. Once the students are comfortable with the probability calculations, I enter the data we collected into a data frame in R and use some prewritten code to visualize how the posterior probabilities changed at each round of the game.

We also discuss the cost of data collection (candy and time), how each student might value these differently, and how that would inform whether they would prefer to keep playing the game to collect more data and win the bag of candy or cut the game short to make sure there is sufficient class time to cover all the course material.

I like this activity because it shows how we naturally use conditional probabilities when making decisions. I also like that it allows for introducing the Bayes' theorem in a real decision-making context, instead of just calculating conditional probabilities for the sake of calculating them.

Are you assigning students real data in your course? If so, where do you get it? Do you prep it? What unique difficulties do the data pose, and how do you deal with them?

Absolutely all data sets students encounter in my courses are real. Some of them are quite simple—bivariate categorical data reconstructed from Gallup, Pew Research, Public Policy Polling, etc. Others are publicly available data sets like the General Social Survey, World Values Survey, Behavioral Risk Factors Surveillance System, etc. I also scrape and gather some data from the web.

For example, I have been using a movie data set for the final project in my STA 101 course for the last few semesters. To construct the data set, I start with a list of (almost) all

movies released in the United States (see *www.imdb.com/list/ls057823854*). I then take a random sample of about 600 movies and obtain data on them such as runtime, release date, critic and audience scores, etc. from the IMDb and Rotten Tomatoes APIs. Additionally, I match the movies to historical Academy Awards and box office data.

I do only a little bit of data prep before releasing the data to the students: remove observations for which no data are available and observations for which information from IMDb and Rotten Tomatoes on the same variables don't match. This leaves about 450 movies in the sample, and this is the sample released to the students for their final project.

Students work on this project in teams, and share their results with me and the rest of the class in a poster session. The project is open ended, but they all have to build a multiple regression model for predicting audience scores and pick a new movie and do a prediction for this movie. This means they need to obtain information about a movie of their choosing for variables in their regression model. They also need to think about how to code the award and box office variables for this movie, since that information is not yet available. What I really like about this is that this task allows us to talk about uncertainty around explanatory variables and how that affects the uncertainty around their prediction. Even if the students may not have thought about this while working on their project, the poster session format allows me to ask in-depth questions about such considerations.

One reason I really like this data set is that everyone knows a little bit about movies so they can reason about the validity of their findings, and they usually have a favorite movie they want to do a prediction for. Another reason is that the response variable, audience score, has a pretty symmetric distribution, which means the conditions for techniques we introduce in the course are met.

Obviously, recognizing when the conditions are not met is an important skill. An even more important skill is understanding the repercussions of the conditions not being met on the validity and scope of the conclusions. However, I think it is important to present a new technique in a situation where it is most appropriate to use it, and then provide examples of scenarios where it might not be. Unfortunately, it can be difficult to find data sets—especially where the response variable is numerical—where conditions for traditional inference methods are met.

Another big challenge is data wrangling, especially in a course like STA 101, where students' computational experience is limited. They tend to have difficulty with tasks like releveling a categorical variable by combining some of the levels or creating a new variable based on existing variables in the data set. Creating multivariate data visualizations is also a challenge. Teaching R with "dplyr" and "ggplot2" has certainly helped in these regards, but I think data wrangling needs to be a central focus of the course to make real strides with these challenges, which means something will need to come out of the curriculum. It's been challenging to decide what that should be.

I've been trying to handle this challenge by offering lots of help in office hours and on the course discussion forum, but a better solution would be to teach students the necessary skills they need to feel comfortable accomplishing these tasks (or looking for help on the web) themselves. The real challenge is figuring out how much to teach. For example, I had a team of students who wanted to add a variable to the movies data set identifying whether the movie was based on a book. Should we be teaching STA 101 students how to scrape data from the web to be able to do this automatically, or should we be telling them "that's a neat idea, but it's beyond the scope of this course"? Two years ago, I would have said the latter is the right answer, but I could be convinced of the former today, since modern tools that make such tasks pretty simple are readily available. ■

Gender Balance in ASA Activities UPDATE

Bonnie Ghosh-Dastidar, Anagha Tolpadi, and Dalene Stangl

This article continues the tradition of looking at the representation of ASA women members among a range of activities supported by the American Statistical Association (ASA), using more recent data from September 2015. This report is being written on behalf of the Committee on Women in Statistics (COWIS). The primary objective was to indicate areas where gender disparities have subsided, as well as highlight those areas where they persist.

While our findings suggest the representation of women across ASA activities has generally improved between 2012 and now, the share of women serving on the editorial boards of scientific journals should be higher (an area that was not previously explored). We also observed that ASA sections in which women are a larger share of the section membership are not well represented in the ASA awards structure. For example, offering awards for doing statistics in the life and/or social sciences substantive areas may improve the gender balance across awards given by the ASA.

Women are an increasing share of the ASA, and considering issues of career development and advancement is an important topic for all. Future efforts should also look at the participation of women members in continuing education efforts and consider issues and metrics relevant especially to women in industry.

Overall Membership

The ASA database contained records for 18,944 members in September 2015. Only members with a reported value of gender were included in this analysis. Of the 18,944, 12.7% did not report a value, while another 2.1% responded as "don't know/don't wish to answer." Therefore, our sample size is 16,135, or 85.2%, of the current membership.

Age: The ASA membership is made up of 34.6% women and 65.4% men. Compared to prior years of data when the percentage of women was 32% in 2012 and 31.5% in 2010, we see a slight upward trend in the share of women in the ASA membership. Women in the ASA are, on average, younger than men—with an average age of 42 years for women compared to 49 years for men. Among ASA members who are less than 45 years of age (n=7,405), 42.9% are women; among members 45 years of age or older (n=7,683), 24.7% are women.

When we looked at the age breakdown among men and women, we found that among ASA men (n=10,017), 57.8% are ages 45 years or above while among women (n=5,071), 37.4% are ages 45 years or above. These percentages are lower than those in 2010 when 66% of men and 41% of women ASA members were ages 45 years or above. This suggests that the ASA membership is getting younger with a decreasing share of those 45 years of age or older, and that the representation of women in the overall ASA membership should continue to increase.

Education level: For this analysis, we restricted the sample further to those who reported their highest degree (n=15,769). Among all ASA members who reported a value for highest degree, 56.6% and 32.4% have a doctoral and master's degree, respectively (similar to 2010 and 2012). Among women, the breakdown is a little different, with a lower percentage (48.8%) reporting a doctorate as their highest degree and a higher percentage (39.0%) reporting a master's. Women appear to be less likely to have a PhD and more likely to have a master's degree, compared to the overall membership.

Conversely, 29.6% of ASA members with a PhD degree (n=8,615) and 41.2% of ASA members with a master's degree (n=4,944) are women. The percent of women among PhD degrees awarded in 2013 for the fields of "Statistics" and "Biometrics and Biostatistics" is 41.7 (212 out of 509). (Statistic comes from the latest "Survey of Earned Doctorates" (NSF/NIH/USED/NEH) *https://nces.ed.gov/programs/digest/d14/tables/dt14_318.30.asp?current=yes*)

Subdivided, there are 47.3% women doctoral recipients (69 out of 145) in biometrics and biostatistics and 39.3% women doctoral recipients (143 out of 364) in statistics. Similarly, we looked up the share of women among recent master's degrees and found 48.5% out of a total of 2,819 earned master's degrees were awarded to women in 2012. (Latest available statistic from the *Digest of Education Statistics* from the National Center for Education Statistics, which reported the total number of earned master's in 2012–2013.)

Again, the total number of earned master's degrees combines multiple fields. (Fields include "Biometry/Biometrics," " Biostatistics," "Statistics, general," "Mathematical statistics and probability," "Mathematics and statistics," "Statistics, other," and "Mathematics and statistics, other")

While the ASA percentages (29.6% and 41.2%, respectively) are lower than the percentages of women among recent PhD and master's graduates (41.7% and 48.5%, respectively), it is important to note that the ASA statistics are for graduates across many decades, while the surveys report on most recent graduates. The lower estimates of ASA relative to the surveys are likely explained by an increasing share of women among recent graduates in statistics.

It seems like the survey statistics should be more directly comparable to the breakdown by gender among younger ASA members (or recent graduates). Therefore, we computed the percentage of women among younger ASA members because we do not have information to identify recent graduates (year of graduation was not available in the ASA database). When we restricted the ASA members to those born in 1985 or later with a non-missing value for highest degree (n=2,655), we found that 43.1% of PhDs and 52.6% of master's degree holders are women. Thus, we found that the share of women among younger ASA members (ages 30 years or less) is comparable to the statistics reported by recent waves of the SED and NCES, and even slightly higher. These statistics demonstrate that the demographic composition of the ASA is changing with an increasing share of women. The slightly higher estimate in the ASA may actually indicate that there is a growing presence of women in the ASA relative to the field.

To look at the representation of women across age group and highest degree more finely, we computed the percentage of women among ASA members in each of these sub-groups defined by age (< 45, >= 45) and highest degree (PhD, Master's, Associate or Bachelor's). The percentage of women among ASA members with ages <45 and with a doctoral degree is 42.0%, which is similar to the percentage (41%) of women among PhD recipients between 1997-2006 (See Table 1).

EARLIER COWIS REPORTS

To read the 2010 report, visit *http://magazine.amstat.org/blog/2010/10/01/women-in-science.*

To read the 2012 report, visit *http://magazine.amstat.org/blog/2012/07/01/genderbalanc.*

Table 1—Percentage of Women Among ASA Members by Age and Highest Degree

	Age < 45 % (#women/ #members)	Age >= 45 % (#women/ #members)
Associate's or Bachelor's	40.7% (500 / 1228)	24.4% (59 / 242)
Master's degree	44.8% (1,269 / 2834)	33.8% (625 / 1851)
Doctoral degree	42.0% (1,160 / 2761)	21.6% (1,152 / 5336)
Total	42.9% (2,929 / 6823)	24.7% (1,836 / 7429)

Place of employment: Among ASA members, 32.0% of academics (excluding students) (n=5,886), 32.5% of business and industry employees (n=4,139), and 35.0% of federal government employees (n=1,098) are women. The lowest percentage of women (24%) is found among the "self-employed/private consultant" category (n=641), while the highest percentage of women (40.5%) is found in the "other" category (n=1,657). Other is a mix of people who don't think the specific categories define their role, including individuals at research institutions and medical centers. Compared to 2010, we find an increase of 4.6% and 4.1% in the share of women in academics and business/industry, respectively.

ASA Section Membership

About a third of ASA members (33.7%) belong to one or more sections of the ASA, which is similar to the rate among ASA women (33.3%). Some indication of interest areas for women ASA members can be learned from the representation of women across these sections. Thus, Table 2 indicates the percentages who are women in each section together with the total number of members belonging to the section. The ranking of sections in the order of percentage of women is similar to that of 2010.

ASA Service and Scientific Activities

Women participate across the different levels of the ASA organizational leadership. In 2015, the ASA executive committee consisted of 17% women (1 out of 6), and the ASA Board of Directors had 44% women (7 out of 16). The 2016 Board of Directors has 56% women (9 out of 16), and the president of ASA is female. Relative to their share of the membership, women in the ASA have less representation in publication activities. The Committee on Publications has about 29% women (7 out of 24). The ASA's flagship journal, *JASA*, has 25% (25 out of 101) women on the editorial board (including editors and associate editors) for Theory and

Table 2—Percentage of Women and Total Number of Section Members

Sections	% women, # women[a]	# members[b]
Statistics in Genomics & Genetics[c]	50.7%, 76	163
Mental Health Statistics[c]	44.9%, 220	573
Statistics in Epidemiology	40.8%, 422	1096
Teaching Stats in the Health Science	40.3%, 215	564
Statistics in Imaging[c]	37.1%, 91	263
Health Policy Statistics	37.3%, 190	531
Government Statistics	36.9%, 110	323
Statistical Consulting	36.4%, 453	1323
Statistical Education	35.6%, 328	963
Biometrics	35.2%, 675	2017
Statistics and the Environment	34.6%, 198	607
Medical Devices and Diagnostics[c]	34.6%, 107	340
Biopharmaceutical	34.3%, 574	1771
Survey Research Methods	33.8%, 295	919
Social Statistics	33.0%, 115	367
Statistical Programmers and Analysts	32.4%, 89	295
Statistical Graphics	29.8%, 114	414
Bayesian Statistical Sciences	28.4%, 298	1111
Defense and National Security	28.4%, 74	276
Nonparametric	28.1%, 127	478
Quality and Productivity	27.9%, 70	265
Statistical Computing	27.8%, 209	814
Statistical Learning and Data Mining	27.0%, 115	453
Risk Analysis	26.5%, 134	534
Statistics in Marketing	24.9%, 83	356
Business and Economic Statistics	22.4%, 145	685
Physical and Engineering Sciences	20.7%, 65	331
Statistics in Sports	16.2%, 68	440

[a] Percent of women is a ratio of the number of women and the number of members who reported gender with a valid value (male, female); [b] the total number is the size of the section and includes those who did not report gender; [c] the counts for these sections come from November 2015 membership data

Methods, 15% (6 out of 40) for Application and Case Studies, and 30% (6 out of 20) for Reviews. In August 2010, these percentages were 18%, 21%, and 33%, respectively.

Table 3 shows the number and percentage of women on the editorial boards of several statistics journals. We include the total number, which includes editors, associate editors, reviews editors, editor-elects, assistant editors, and advisory editors, and the percentage of women on the board. While there may be considerable variation in editorial boards from year to year, one might expect these percentages to be close to the percentage of women among members with a doctoral degree (29.6%). Only three ASA journals meet or exceed this expected value of 29.6%, including *Journal of Educational and Behavioral Statistics; Journal of Agricultural, Biological, and Environmental Statistics*; and *JASA* Reviews.

Another measure of ASA activity is participation in JSM. In 2015, 40% of the members of the program committee (8 out of 40) were women. Only 2 of 11 of the keynote speakers listed in the 2015 program were women. Another indicator of both professional regard and involvement is giving an invited talk or chairing an invited session. Counting women chairs, presenters, panelists, and discussants in all invited panels, papers, and special presentations on the Monday of JSM 2015 (for illustration only) yields about 33.8% women (67 out of 198), indicating a participation that corresponds well with overall membership percent. (These counts include one invited panel, where 4 out of 4 panelists were women.)

ASA Fellow Selection

Of all ASA members, 8.4% are fellows, while among women, 5.1% are fellows. Of the 1,434 ASA fellows in the current ASA membership database, the great

Table 3—Percentage of Women and Number of ASA Members Serving on Journal Editorial Boards

Journal	Percent of women	Number of women / Total number	Any women presently in a primary editor role
ASA Journals:			
Journal of Educational and Behavioral Statistics	43.2%	16 / 37	No
Journal of Agricultural, Biological, and Environmental Statistics	37.9%	11 / 29	Yes
JASA Reviews	30.0%	6 / 20	No
Journal of Computational and Graphical Statistics	26.8%	15 / 56	No
The American Statistician, Reviews	25.0%	5 / 20	No
JASA Theory and Methods	25.0%	25 /101	No
Statistics in Biopharmaceutical Research	21.1%	4 / 19	No
Statistics and Public Policy	20.0%	3 / 15	No
Journal of Nonparametric Stats	20.0%	8 / 40	Yes
Journal of Statistical Software	18.8%	12 / 64	Yes
JASA Applications and Case Studies	15.0%	6 / 40	No
The American Statistician	10.8%	4 / 37	Yes
Technometrics	11.1%	3 / 27	No
Journal of Business & Economic Statistics	9.5%	8 / 84	No
Non ASA Journals:			
Annals of Applied Statistics	28.2%	24 / 85	No
Journal of the Royal Statistical Society. Series B: Statistical Methodology	21.2%	7 / 33	Yes
Biometrika	16.0%	4 / 25	No
Statistical Science	8.7%	2 / 23	No

Table 4—Percentage of Fellows Among Women and Overall by Age Group

Age and cohort	Percent of fellows in age group [a]	Percent of fellows among women in age group	Number of women fellows/ Number of women in age group	Percent of fellows among members in age group	Number of fellows / Number of members in age group
45–49 (1963–1967)	7.1%	10.6%	29 / 273	9.4%	81 / 861
50–54 (1958–1962)	11.6%	12.4%	28 / 226	15.3%	132 / 863
55–59 (1953–1957)	12.6%	14.4%	30 / 209	17.6%	144 / 820
60–64 (1948–1952)	16.6%	23.5%	43 / 183	21.1%	189 / 896
65–69 (1943–1947)	16.6%	27.2%	34 / 125	24.2%	189 / 782
70–74 (1938–1942)	16.9%	28%	21 / 75	31.8%	193 / 606
75+ (1937 and earlier)	18.7%	34.4%	21 / 61	41.9%	213 / 508

[a]This calculation excludes members less than 45 years of age and is restricted to those with a doctorate.

Figure 1. Percentage of nominations and success rates among women for ASA fellowships

majority, or 89.8% (n=1,288), hold a doctoral degree. In addition, there are 59 ASA fellows with a bachelor's, master's, or other degree and another 87 who did not list their degree. When the membership is subset to doctoral degree holders, 16.6% of men (n=6,035) and 10.0% of women (n=2,550) are fellows. When doctoral degree holders were further separated by age, we found that 1.9% of men and 1.9% of women were fellows among those 45 years or younger, while 22.3% of men and 17.9% of women were fellows among those 45 years or older.

COWIS has long tracked the percentage of nominations and selections of women as ASA fellows. The two graphs in Figure 1 present these results since 2004. Importantly, the years with high percentages of women among total nominations were those when ASA leadership or COWIS members exerted special effort to nominate women. In the years between 2005 and 2009, the percentage slipped as efforts waned. The second panel demonstrates that women, once nominated, had similar or slightly higher rate of success.

Table 4 shows the percentage of men and women who are fellows among members with doctorate degrees, by five-year age groups above 45. It is interesting that the percentage of women fellows in the youngest group (45–49 years of age) is higher (10.6%) than the corresponding statistic for men (8.8%). This is likely due to ASA-wide efforts to increase the visibility of women within the association.

Table 5— ASA Awards with Number and Percent Recipients Who Were Women

Award	1996–2005			2006-2015		
	All	Women	%W	All	Women	%W
Deming Lecturer	10	0	0%	10	1	10%
Founders	30	12	40%	33	15	45%
Gottfried E. Noether[a] (junior)	5	2	40%	9	3	33%
Gottfried E. Noether [b] (senior)	7	0	0%	11	1	9%
Outstanding Statistical Application	43	6	14%	24	4	17%
President's Award	10	1	10%	10	1	10%
R.A. Fisher Lectureship	10	0	0%	10	1	10%
Samuel S. Wilks Memorial	10	1	10%	10	1	10%
Snedecor Award	7	0	0%	5	1	20%
Statistics in Physical Engineering Sciences	29	1	3%	25	4	16%
W.J. Dixon for Excellence in Statistical Consulting [c]				7	1	14%
W.J. Youden on Interlaboratory Testing	22	5	23%	46	13	28%
Waller Education Award [d]	4	2	50%	10	5	50%

[a] Started in 2001; [b] started in 2000; [c] started in 2009; [d] started in 2002

ASA Awards

The ASA grants several prestigious awards as recognition of professional excellence, apart from the ASA fellowship. Gender data on awardees from a number of societies, including the ASA, were collected by the AWIS AWARDS project in collaboration with ASA staff.

ASA awards and percentages of awardees who were women are reproduced in Table 5. We see that the percentage of women among recipients of ASA awards is quite low and has not increased since the last decade. The numbers also reflect a general finding of the AWIS study that women are more likely to receive awards recognizing service than scientific achievement. It was noted by the study that ASA awards council members are presently 29.4% women.

Extensive research on implicit stereotyping cited in the AWIS AWARD workshop does indicate that just including women on award selection committees is necessary, but not sufficient, to ensure unbiased consideration, free of subconscious gender expectations. Perhaps even more importantly, comparing the list of awards to the list of sections indicates that predominant present interest areas of both men and women in the ASA, such as biometrics and social statistics, are not well captured by awards. ■

SCIENCE POLICY

Final FY16 Spending Bill Provides Increases for NIH, Census, Statistical Agencies

Saves Agency for Healthcare Research and Quality

Steve Pierson, ASA Director of Science Policy

Steve Pierson earned his PhD in physics from the University of Minnesota. He spent eight years in the physics department of Worcester Polytechnic Institute before becoming head of government relations at the American Physical Society.

Table 1—FY12–FY16 Budgets for NIH, NSF, AHRQ, and the 13 Primary Federal Statistical Agencies

	FY12	FY13	FY14	FY15	FY16	
					Final	Change from FY15
Research Agency (amounts in millions of dollars)						
NIH*	30623	29300	30070	30311	32084	5.8%
NSF	7033	6884	7172	7344	7463	1.6%
ARRQ*	381	371	371	364	334	-8.2%
Statistical Agency (amounts in millions of dollars)						
BEA	92.2	89.8	95.0	96.3	105.0	9.1%
BJS	41.3	41.3	45.0	41.0	41.0	0.0%
BLS	609.0	577.2	592.2	592.2	609.0	2.8%
BTS	25.2	26.0	26.0	26.0	26.0	0.0%
Census	942.4	841.7	945.0	1088.0	1370.0	25.9%
EIA	105.0	99.5	117.0	117.0	122.0	4.3%
ERS†	85.4	79.1	85.8	85.4	85.4	0.0%
NASS†	167.8	175.2	170.4	172.4	168.4	-2.3%
NCES	247.0	226.0	235.0	232.1	261.0	12.5%
NCHS†	154.1	154.1	155.4	155.4	160.4	3.2%
NCSES	43.3	41.6	47.1	58.3	58.5	0.3%
ORES	29.0	27.5	26.9	29.0	25.9	-10.7%
SOI‡	38.7	33.1	35.0	36.6	37.9	3.6%

*AHRQ and NIH amounts are program levels.

‡The SOI was restructured in FY13 so the FY12 level is not comparable with that of subsequent years.

†ERS, NASS, and NCHS went through accounting changes in 2014 so the FY12, FY13, and FY14 levels upward ($7.7 million for ERS; $9.2 million for NASS; and $15.4 million for NCHS) to be comparable with FY15 and FY16 levels.

The Fiscal Year 2016 (FY16) omnibus spending bill, which provided the budgets for the entire federal government and was signed into law in mid-December, included needed increases for the National Institutes of Health (NIH) and many federal statistical agencies. The bill also was welcomed for what it didn't include: House provisions making the American Community Survey (ACS) voluntary and cutting the budgets for the National Science Foundation (NSF) Social, Behavioral, and Economic Sciences (SBE) Directorate and Geosciences (GEO) Directorate. The generally better funding was made possible by this fall's budget deal increasing the overall caps on the FY16 and FY17 budgets.

NIH, NSF, and AHRQ

With bipartisan recognition of the need to increase its budget, NIH saw a 5.8% boost to $32.1 billion, the largest increase since its doubling concluded in FY03. $200 million of the increase is for the president's new Precision Medicine Initiative. The budget also increases funding for the president's Brain Research through Advancing Innovative Neurotechnologies (BRAIN) Initiative by $85 million (to a total of $150 million) and Alzheimer's disease research by $350 million (to $936 million.)

The agreement also stresses the importance of reproducibility of scientific methods, stating Congress "expects NIH to continue to stress the importance of experimental rigor and transparency of reporting of research finding to enhance the ability of others to replicate them."

For Big Data to Knowledge (BD2K), the administration requested an increase of $19.5 million to $63 million, but the agreement does not specify a final BD2K level.

The NSF saw a 1.6% increase for its budget to nearly $7.5 billion. The agreement includes $147 million for neuroscience and cognitive science research done through NSF's Understanding the Brain activity, which includes the BRAIN Initiative. The agreement also stipulates a minimum of $160 million for cybersecurity research. Perhaps more significantly, as noted above, the agreement did not adopt the House cuts to the SBE and GEO directorates, though it freezes the SBE budget at its FY15 level.

In an interview with Science magazine shortly after Congress approved the spending bill (*http://bit.ly/1KdKTaZ*), longtime NSF champion Rep. John Culberson (R-TX), chair of the House Commerce, Justice, Science (CJS) appropriations subcommittee—which, with its Senate counterpart, helps to set the budget for NSF—says he remains "committed to do[ing] the very best possible to ensure that NSF is fully funded." Regarding the House cuts to GEO and SBE, he noted strong opposition to the cuts by other parts of Congress and the need to compromise. He also added he didn't disagree with the social and behavioral community that "their research and expertise is essential to solving some of the toughest problems facing society."

The Agency for Healthcare Research and Quality (AHRQ) budget was cut 8.2%, but that is relatively good news after the House zeroed the FY16 AHRQ budget and the Senate cut it by 35%. (The House also zeroed the AHRQ FY13 budget in 2012.) The chambers were concerned that AHRQ funding was redundant to that of NIH and other agencies. The community, including the ASA and Health Policy Statistics Section, was active in the advocacy for restoring the AHRQ budget. The following language was included for AHRQ: "The agreement expects AHRQ to focus its research on its traditional mission, such as improving patient safety and preventing health care-associated infections." The AHRQ budget is now 12% below its FY12 level.

Federal Statistical Agencies

Though the U.S. Census Bureau requested a budget of $1.50 billion for FY16 as part of the multiyear ramp up for the 2020 decennial census, the final level of $1.37 billion was welcomed after the House cut its budget below the FY15 level this summer and the Senate provided an increase of only $40 million.

As noted above, the final bill omitted the House provision to make the ACS voluntary. While the mandatory ACS has seen continual threats over the last several years, the Census stakeholder community was especially concerned this year with the Senate having changed to a Republican majority and a new chair of the CJS appropriations subcommittee—which helps determine the Census budget—who had long expressed strong feelings that the ACS not be mandatory.

The Senate remained strongly supportive of the mandatory ACS, and Culberson took a more measured approach to address his ACS concerns. In the Science interview, Culberson said he will be monitoring the ACS work very closely. "I do not want to see them harassing American citizens or invading their privacy. I continue to believe that the ACS should not compel people to reveal details about their personal lives. An American's most fundamental right is the right to be left alone and not have the government invade their privacy," he said. "I made sure that the Department of Commerce has enough money to perform its constitutional duty to do a 2020 Census. But we want to make sure that the money is spent wisely and that they don't have another [computer] disaster like they did for 2010."

The 9.1% increase for the Bureau of Economic Analysis (BEA) includes $5 million for the move from downtown Washington, DC, to the headquarters of the U.S. Census Bureau in Suitland, Maryland, leaving an additional $4 million (or a total of approximately $100 million) for program activities. The programmatic level of $100 million restores BEA to its FY12 level of $92.2 million, accounting for inflation (though still short of the FY10 level of $93 million.)

The third economic statistical agency, the Bureau of Labor Statistics (BLS), received a boost of 2.8% to $609 million. The level is disappointing in comparison to its FY12 level of $609 million, but welcome compared to its FY13–FY15 levels and considering the Senate proposed to cut the BLS budget by 2%. In retrospect, the Senate's proposal to cut BLS by 2% was helpful in that it resulted in numerous articles and column in support of BLS's work and urging a stronger budget.

The other agencies that received an increase in the omnibus bill are the Energy Information Administration (EIA) (4.3%), National Center for Education Statistics (NCES) (12.5%), and National Center for Health Statistics (NCHS) (3.2%). Congress did not provide $12 million in mandatory Prevention and Public Health Fund for NCHS requested by the administration and included in past years. The Bureau of Justice Statistics (BJS) and Economic Research Service (ERS) were both held at their FY15 levels, and the National Agricultural Statistics Service (NASS) was cut 2.3%.

Based on initial estimates, the National Center for Science and Engineering Statistics' (NCSES)

budget is flat from FY15; the Internal Revenue Service Statistics of Income Division's (SOI) budget increased 3.6%; and the Social Security Administration Office of Research, Evaluation, and Statistics' (ORES) budget was reduced 10.7% (following completion of its funding for the latest Survey of Income and Program Participation Panel.)

The budget for the Bureau of Transportation Statistics (BTS) was determined through the surface transportation bill—the Fixing America's Surface Transportation (FAST) Act, H.R. 22—also made law in December. The BTS budget is determined outside the annual appropriations bill because it is funded through the cash-strapped Highway Trust Fund. The FAST Act holds the BTS budget at $26 million through FY20, the same level it had in FY05, which will amount to a 30% cut from FY05 to FY20 due to inflation.

MORE ONLINE
Details about the FY16 budget deliberations can be found at *http://bit.ly/1OPLkhm*, including the administration's request level and the House and Senate levels.

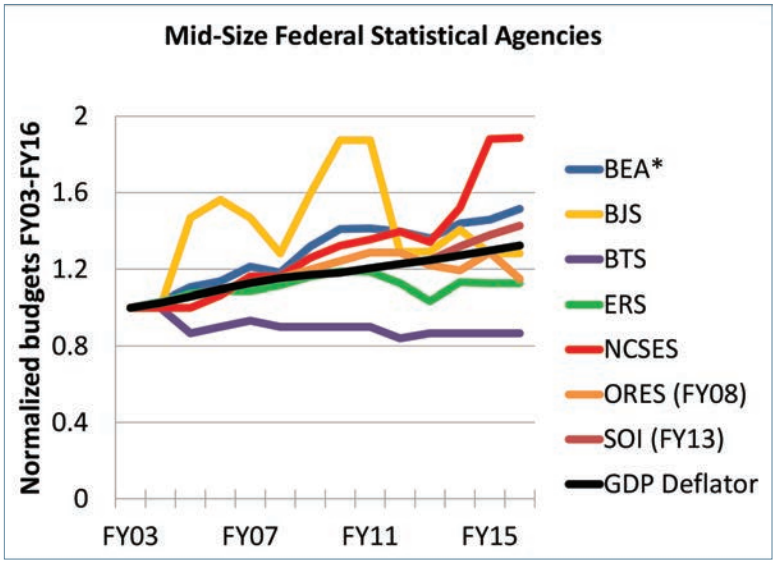

Figure 1. The budgets of the seven mid-sized statistical agencies normalized to their FY03 levels, along with the GDP deflator to account for inflation. The Social Security Administration Office of Research, Evaluation, and Statistics' budget is normalized (and adjusted for inflation) to its FY08 level, when the current accounting scheme was implemented. Similarly, the Statistics of Income budget is normalized to its FY13 level.
*The BEA FY16 level omits the $5 million provided for its move.

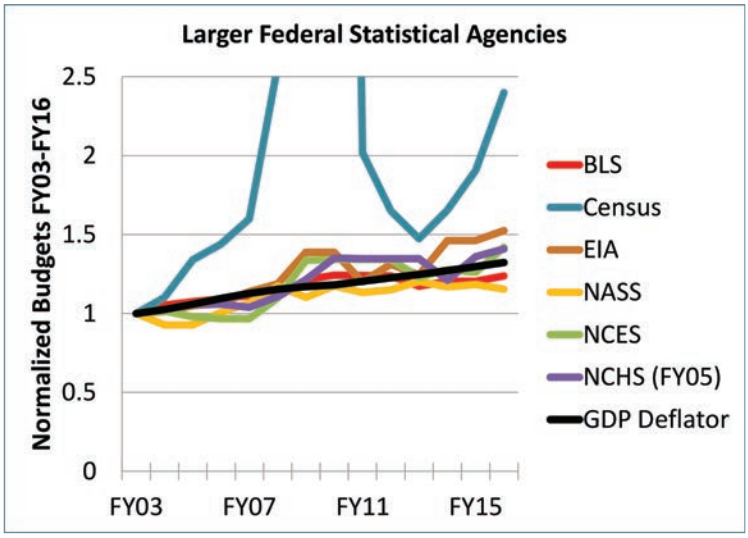

Figure 2. The budgets of the six larger statistical agencies normalized to their FY03 level, along with the GDP deflator to account for inflation. The NCHS annual budgets are normalized (and adjusted for inflation) to the FY05 level, when the current accounting scheme was implemented. The U.S. Census Bureau line peaks at 12.65 in FY10.

Figures 1 and 2 put the FY16 budgets in a longer-term perspective, showing their budgets normalized back to their FY03 levels. For the mid-size agencies (Figure 1), one sees BEA and NCSES receiving increases above that of inflation (though the BEA budget was relatively flat from FY10–FY15.) BTS and ERS have both lost purchasing power due to inflation, while BJS and ORES have mostly kept up with inflation since FY03. The BJS budget has seen large increases and subsequent decreases, however.

For the larger statistical agencies (Figure 2), the U.S. Census Bureau and EIA have done better than inflation since FY03, though a sizable part of the apparent Census Bureau budget increase is due to the conversion in the mid-2000s of the decennial long-form census to the now monthly American Community Survey. With recent increases, NCES an NCHS are just above the inflation since FY03, while BLS and NASS are below. ■

STAT*tr@k*

Advice for Those Applying to Graduate School

What does it take to get into graduate school, especially a graduate program in statistics? We asked David Banks and Mark Daniel Ward, both professors in statistics, to give their best advice to those determined to move their academic career forward.

David Banks earned his PhD in statistics in 1984 from Virginia Tech, and then did a postdoc at Berkeley. He is now at Duke University, but previously taught at Cambridge and Carnegie Mellon. Along the way, he worked for the National Institute of Standards and Technology, the U.S. Department of Transportation, and the Food and Drug Administration. He is a former coordinating editor of the *Journal of the American Statistical Association* and a founding editor of *Statistics and Public Policy.*

I've been asked to draw back the curtain on the graduate admissions process. But different people and different departments weigh applications differently, so I can only give my sense of how things often work, and how they should work, based on service upon admissions committees at multiple universities.

First, most places care less about grades than undergraduates imagine. If you are applying to a PhD program in statistics, nobody really worries if you flunked French literature. Buy if you get one or two low grades in statistics, mathematics, or computer science courses, you should explain the circumstances in your cover letter, and those low grades need to be balanced by excellent grades in other stat/math/CS courses.

Most departments value strong letters from people they know. Such people are calibrated, and we know they understand our academic program. So my advice is to seek letters from the most visible and senior people in your department (and plan ahead—take courses from them and do well so they can write good letters for you).

Asking for letters from famous people can be awkward. A relatively graceful way to do this is to ask them about which universities they think would be a good fit for you.

Don't be crushed if they don't suggest Harvard/Stanford/Berkeley/(Duke); they are giving you valuable guidance.

Also, this naturally leads to a nice discussion in which they advise you on safety schools, stretch schools, and the number of each to which you should apply. (My view is that 6–10 is sufficient.)

There are sometimes cultural problems in interpreting letters. Some professors in other countries are scant with praise—a curt comment that the applicant is probably adequate for our program can be equivalent to unqualified endorsement from U.S. faculty. For this reason, the admissions committees usually include faculty from China or India who are better able to assess such letters (and who better know the quality of the applicant's undergraduate program).

GRE scores are filters, and their use is a bit complex. If your scores are much below those of other students in the program to which you apply, then the wind is against you and you will want several safety schools.

Some departments value high scores more than others, and some value the Quantitative Reasoning scores more than the Verbal Reasoning and Analytical Writing scores. I tend to weigh them all equally, since so much of our professional life is about communication. (But I, and most others, make large allowances for applicants whose first language is not English.)

Note that some departments (notably Stanford) require the GRE Subject Test in Mathematics.

Often, the essay or cover letter or statement of interest has less impact than the applicant expects.

All the other résumé padding is at best irrelevant, or perhaps even evidence of distractability.

About two-thirds of them seem to follow a three-part formula: I worked hard in school; I overcame personal challenges (insert a touching story about a dead grandmother or illness or social alienation); and I dreamed of studying local asymptotic minimaxity from earliest childhood. I find these nearly useless in judging whether someone will succeed in our program and whether they would be interesting members of our community. Instead, I prefer essays that describe something the applicant did with statistics, or something they encountered in the classroom and really loved.

A soupçon of humor is good, and a bit of personality is nice. Sadly, many undergraduates think having multiple majors and minors is impressive, as is leadership in various university clubs, participation in sports, summer research experiences, and volunteer work for the community. But the admissions committee only cares about whether the applicant will thrive in its department's PhD program in statistics.

All the other résumé padding is at best irrelevant, or perhaps even evidence of distractability.

There is a wide range of standards in statistics programs. The best skim off the top applicants in the world—the entire entering class has perfect GREs, perfect grades, and at least two out of three letters saying the person is a hands-down genius who will change the field.

But great statisticians have come from humbler programs, and career success depends on many more factors than most students imagine. The main trick is to be fundamentally interested in what you are doing.

I strongly encourage undergraduates to take a few graduate-level courses in statistics if they can. First, it is a good way to meet and impress eminent faculty whose letters count more. Second, it changes the admission committee's discussion: If you have already succeeded in a graduate class, then we know you have the necessary ability. Additionally, such classes tend to be smaller, more fun, more challenging, and more leniently graded (a C is usually a failing grade for graduate students, so the floor is high).

Also, be realistic. If you aren't a super-strong A student, don't bother applying to Harvard. Nobody is accepted by being lucky or personable.

There is a story about a famous mathematician who, as an undergraduate, didn't bother going to classes that didn't interest him. So after four years, he had a GPA of about 1.7. He applied to the graduate program at Berkeley, and when the admissions committee opened his folder, it contained three amazing letters from the math professors whose classes interested him. The GREs were spectacular—the guy is a genius. And there was a letter from his registrar saying the university could not release his transcript because he has an overdue library book. He was accepted, of course, and the anecdote underlines the reassuring fact that there are many paths to success.

Mark Daniel Ward is an associate professor of statistics at Purdue University, where he has been on the faculty since 2007. He is also a Purdue alumnus, with a PhD in mathematics with specialization in computational science (2005). His research is in probabilistic, combinatorial, and analytic techniques for the analysis of algorithms and data structures.

I will share some general advice for students who want to attend graduate school, especially a graduate program in statistics. I have been undergraduate chair in statistics at Purdue since 2008, so much of the advice I offer here is along the lines of what I would tell an undergraduate student who is planning to apply for graduate study. I will make several generalizations here, but I point out that the road to graduate school is ultimately dependent on the student, so not all of my discussion will ring true for everyone.

The process of being accepted to graduate school begins years before visiting potential graduate programs and/or applying to such programs. Students who want to go to graduate school should be talking to their academic advisers from an early point in their undergraduate careers. The students who are admitted to graduate school often have great time management, and they often make some sacrifices. They generally spend a lot of time

on the foundational courses in their major. This often means they decline to become involved in too many nonacademic activities or groups in college. They are usually pretty determined and focused.

Successful students often finish their undergraduate curriculum while they are juniors so they can devote most of their senior year to taking graduate courses. This requires advanced planning and consultation with one's academic adviser, to say the least. I notice many students no longer try to pursue two or three major programs of study. Instead, some of the most successful students are choosing to focus on just one major as undergraduate students so they can go deeper into their major more quickly. Of course, this often happens with some sacrifice of the breadth of a student's course selection, but the whole idea of going to graduate school is usually to go deeper into one chosen discipline after all.

Letters of recommendation are among the most important parts of an application for graduate school. It is usually necessary to find three professors (not lecturers, not advisers, and not graduate student teacher's assistants) who can write an insightful letter about a student's preparation for graduate study. I always encourage students to try to talk with six or seven professors about the potential of going to graduate school. Ask the professors: "What do you remember about me? Do you think I am well suited for graduate school? Do you think I will get admitted and be successful in the programs where I want to apply?" Depending on what the six or seven professors say during such conversations, the students can return later to three of the professors and ask for a letter of recommendation. Sometimes, a student will be surprised about which professors remember the student best and which professors think the student is ready for graduate study.

I strongly recommend students have their graduate school personal statement already written when they talk to their potential letter writers. They should bring this essay, their academic transcript, their résumé, and a note that gives the professor permission to discuss their grades.

The essay for graduate school is often a complete mystery for students. Many write about things they have been doing since kindergarten (e.g., when they fell in love with mathematics or statistics, the time they took AP Calculus or AP Statistics in high school, etc.). I tell students it is much more effective to write—in a concrete way—about what they want to be doing in 10 years. This allows the graduate programs to see if the student's goals are a good fit for the kinds of mentors in the graduate program, as well as for the kinds of research offered in the program.

While students discuss their goals for the future, they should naturally reflect on what is most pertinent to how they developed those goals (e.g., research experiences, especially influential coursework, internships, etc.). By focusing concretely on future goals, students will often avoid many of the extraneous subjects they would write about and only the most relevant details will remain.

I also insist students remove any sentences in their essays that are so generic another student could have written them (e.g., "I love statistics," "I am interested in doing research," etc.). Every sentence should contain specifics about the student who is writing the essay.

If a student has already pursued research as an undergraduate, this should be highlighted as early as possible in the personal statement. It is even better if the student published (or will publish soon) the results from such an experience. It is remarkably helpful when a student is able to tie their research experience into the larger narrative of why they are applying for a particular graduate program. A student's research experience is often what differentiates them from other applicants.

Students should be aware that graduate programs in statistics, especially in large departments, offer a variety of tracks. For instance, a student who enjoys theoretical study will usually focus on probability theory or statistical theory. A student who wants to do consulting or government work might focus on applied statistics. A student who likes computer science as well as statistics might focus on computational statistics or machine learning. Some students choose biostatistics. It is helpful to identify (if possible) which area a student wants to focus on. This allows the graduate program to pay more attention to the most relevant parts of a student's background and training.

Students should choose programs in which they have the greatest possibility of finding a mentor whose research is relevant to their own interests. It is helpful to visit a few graduate programs. Moreover, if a student visits a graduate program, the program knows a student is likely to accept an offer of admission. These are simply aspects of the student and the graduate program both trying to identify whether the one is a good fit for the other.

Finally, I always emphasize that the process of applying for graduate study is a natural selection process. Students are likely to be admitted only to programs in which they are likely to succeed. Graduate committees tend to be pretty talented at identifying students who will succeed in programs at their institutions. If a student is not admitted to a particular program, I console the student by telling them they probably were simply not the right "fit" for that graduate program.

Much like the sorting hat in the Harry Potter books, students must be classified according to their interests and strengths. Applying for graduate study is an exciting time! ■

Late-Breaking Session Proposals Being Accepted

Jeffrey Morris, JSM Program Committee Chair

SUBMIT A PROPOSAL
Help us put the final touch on the impressive JSM 2016 program! Visit *www.amstat.org/meetings/jsm/2016/iolslatebreaking.cfm.*

TO COME
A description of the late-breaking sessions and other special sessions will appear in a future issue of *Amstat News.*

Planning for the 2016 Joint Statistical Meetings (JSM) program started last July, so most technical sessions have already been organized. The advanced planning required to organize such an expansive meeting as JSM precludes scheduling sessions on contemporary topics of emerging interest as the year progresses. As a result, we have set aside two invited session slots for late-breaking topics, for which anyone can submit a proposal.

A late-breaking session must cover one or more technical, scientific, or policy-related topics that have arisen during the one-year period prior to JSM 2016. Proposals for late-breaking sessions should be emailed to JSM 2016 program chair, Jeffrey S. Morris, at *jefmorris@mdanderson.org* with a copy to the ASA meetings department at *meetings@amstat.org* by April 15. The proposal must include the following:

- Session description—including a title, summary of statistical and scientific content, and explanation of the subject's timeliness and significance—and comments about the intended target audience
- Format of the session (e.g., a chair and four panelists, 2–3 speakers and a discussant, etc.)
- Names, affiliations, and contact information for the session organizer, chair, and all participants (speakers, panelists, discussants)
- A title for each presentation in the session
- Web links to relevant technical reports or news reports, if applicable

Organizers should make sure the participants agree to participate before the proposal is submitted. The JSM participation guidelines state that a speaker can give a main presentation and participate in a late-breaking session at the same meeting, so previous commitment to a regular session does not preclude participation.

Two late-breaking sessions will be selected from the proposals received by the deadline (subject to approval by the ASA Committee on Meetings). Proposals will be judged on statistical and scientific quality, timeliness, significance and impact, potential audience appeal, and completeness. ■

In collaboration with Fiona Tomley and Damer Blake at The Royal Veterinary College at the University of London, **Arni S.R. Srinivasa Rao**, associate professor in the department of biostatistics and epidemiology and mathematics at Augusta University, developed a grid model that shows the paths chickens take to find food and water. The walking patterns could give a clue to distinguish between sick and healthy chickens and help farmers reduce their losses in poultry farming.

The study, which was published in the journal *Mathematical Methods in the Applied Sciences,* has garnered wide media attention, including a story in the magazine Mental Floss and on the website *statisticsviews.com*.

On several occasions during past 5-6 years, Rao visited his two co-authors at their parasitology labs in London to understand the eimeria parasite spread in chickens and to conduct this collaborative study.

Other than at the Indian Statistical Institute and Augusta University, Rao has conducted his research in mathematical biology at Hiroshima University, the Indian Institute of Science, Benguluru, and University of Oxford.

Rao has published his modeling research in leading mathematical biology and mathematics journals, and he was one of the organizers and a scientific board member of the annual meetings of the Society of Mathematical Biology in 2015. ■

Brittney Bailey, winner of the Lester R. Curtin award; **Peng Liu**, winner of the Lingzi Lu award; and **Joy Liu**, winner of the Bartko scholarship, will receive registration and travel support to the ASA Conference on Statistical Practice.

Lester R Curtin Award Winner Brittney Bailey is a PhD student in biostatistics at The Ohio State University. In 2012, she earned a MS in statistics from The Ohio State University, and in 2010, she earned a BA in mathematics from Messiah College. In her advanced longitudinal data course, she submitted the best paper in the class of eight doctoral students. Bailey was an outstanding teaching assistant at The Ohio State University, demonstrating great aptitude for understanding the potential sources of confusion for students and misconceptions about introductory statistics. She is currently a graduate student research assistant. In her first major assignment, she worked on meta-analysis of two recently completed clinical trials; a paper from this work is under review at Molecular Nutrition and Food Research. Her ultimate goal is to become a faculty member in biostatistics at an institution where teaching and research are equally encouraged and supported.

Lingzi Liu Memorial Award Winner Peng Liu is a second-year master's student in biostatistics at the University of Pittsburgh. Prior to coming to the United States, he earned a bachelor's degree in preventative medicine in Sun Yat-sen University and worked at the FDA in Guangzhou, China. Peng is an outstanding student, earning top scores in his courses and the highest GPA of all second-year students in the biostatistics department. He was recently selected for a student researcher position in the department of renal in the University of Pittsburgh School of Medicine. Peng hopes to use his skills and knowledge in biomedical research to improve health care.

John Bartko Award Winner Joy Liu is a recent graduate of Cornell University and ASA-accredited GStat. She is currently employed as a statistician at the Energy Information Administration. In 2013, she earned both her Certified Base and Advanced Programmer for SAS 9 from the SAS Institute. Liu will take advantage of the networking and mentoring opportunities available at CSP to guide her toward her career goal of becoming an Accredited Professional Statistician. She looks forward to using her expertise and statistical training to sharpen her analytical and communication skills so she can write accurate and relevant articles for the Energy Information website. ■

A team of Iowa State University graduate students topped 98 other universities from 28 countries to capture first place in the 15th annual Data Mining Cup (DMC). It is the first time a team from the United States has won the competition.

Teams had six weeks to develop a solution for a data mining problem about optimal return prognosis. This year, teams had to use an unidentified online store's historical purchase data to create a model for new orders that predicts the probability of a purchase being returned.

Iowa State team members and their departments are **Guillermo Basulto-Elias** (statistics), **Fan Cao** (statistics), **Xiaoyue Cheng** (statistics), **Marius Dragomiroiu** (computer science), **Jessica Hicks** (bioinformatics and computational biology), **Cory Lanker** (statistics), **Ian Mouzon** (statistics), **Lanfeng Pan** (statistics), and **Xin Yin** (bioinformatics and computational biology/statistics). Lanker and Mouzon were on last year's Iowa State team, which finished in fifth place.

To read people news in its entirety, visit *http://magazine.amstat.org/blog/category/membernews/amstatpeople.*

Next year's competition begins April 6. Teams can begin registering March 9. Visit the DMC website at *http://bit.ly/1PYwLXR* for information.

To read about the Iowa State team, visit the university website at *www.news.iastate.edu/news/2014/07/10/data-miners*. ■

Cornell University professor **John M. Abowd** will join the U.S. Census Bureau as the new associate director for research and methodology and chief scientist through an interagency personnel agreement. The appointment will be effective June 1.

"I'm thrilled to have Dr. Abowd coming on board to help lead critical work to modernize the Census Bureau's operations and products," Census Director John Thompson said. "John is an internationally renowned scholar and a great addition to lead our research and methodology efforts."

Abowd joined the faculty of the Cornell University School of Industrial and Labor Relations in 1987. He is currently the Edmund Ezra Day Professor of Economics, Statistics, and Information Science. He began his long association with the Census Bureau in 1998, when he joined the team of distinguished senior research fellows who helped found the Longitudinal Employer-Household Dynamics program. He has served continuously since 1998 as a scientific adviser to that program and others at the bureau.

Abowd is a fellow and past president of the Society of Labor Economists. He is also a fellow of the American Statistical Association and the Econometric Society, as well as an elected member of the International Statistical Institute. He serves on the National Research Council's Committee on National Statistics and the American Economic Association's Committee on Economic Statistics.

To read more about Abowd, visit *http://prn.to/1ZlayFH*. ■

Larry Lesser's parody "The Gambler" was judged one of the winning songs in the fall 2015 math song contest conducted by the National Museum of Mathematics.

"The Gambler," already named the "Best Online Submission" in the ASA's JSM 2014 Got Talent competition, is part of Larry's broader effort to educate about lotteries and use music as a way to motivate mathematics/statistics.

Winning writers performed to a full house at the museum. To view footage of Lesser's performance, visit *www.causeweb.org/resources/fun/db.php?id=537*. ■

Sastry G. Pantula, 2010 ASA president, and **Jessica Utts,** current ASA president, were guest speakers at the Second International Conference on the Theory and Application of Statistics, which took place in the department of statistics at the University of Dhaka in Bangladesh December 27–29, 2015.

The conference brought statisticians together from around the world to explore new frontiers of statistical theory and applications in teaching, research, and the use of statistics in government and nongovernment policymaking, with a focus on developing countries such as Bangladesh.

To read more about the event, visit *www.dusdaa.org* or view Utts' column in this issue. ■

Simon Singh, a science writer and broadcaster, is receiving the 2016 Joint Policy Board for Mathematics (JPBM) Communications Award for Expository and Popular Books.

Although Singh is not a mathematician—his doctorate is in particle physics—he has a deep love for and fascination with mathematics that shines through his many books and productions. One of his first was the documentary "The Proof." Broadcast in the PBS Nova series, it brought to life the story of Andrew Wiles's proof of Fermat's Last Theorem. Singh's 1997 book on the same subject, *Fermat's Enigma* in North America and *Fermat's Last Theorem* in the UK, was a number-one bestseller in Britain and has been translated into more than 25 languages.

Singh's other books include *The Code Book* (1999), a history of codes and codebreaking, and *The Simpsons and Their Mathematical Secrets* (2013), which is about the numerous references to mathematics hidden in the world's most successful TV show. His radio and TV programs in the United Kingdom include "The Science of Secrecy" (a five-part history of cryptography), "Five Numbers," "Another Five Numbers," and "A Further Five Numbers." He also has participated in numerous stage productions that involved mathematics. His school-based projects include the Undergraduate Ambassadors Scheme, which currently runs in more than 100 STEM departments in the UK, sending 1,000 undergraduates into schools each year to support students.

The JPBM represents the American Mathematical Society (AMS), American Statistical Association, Mathematical Association of America, and Society for Industrial and Applied Mathematics.

To read more about Singh, visit the AMS website at *www.ams.org/news?news_id=2897*. ■

Mary G. and Joseph Natrella Scholarship

The ASA Quality and Productivity Section announces the 2016 Mary G. and Joseph Natrella Scholarship, which supports student participation in the Quality and Productivity Research Conference (QPRC). Winners will receive a $3,500 grant, a $500 stipend toward travel and housing expenses, complimentary registration for the conference, and complimentary registration for the pre-conference tutorial given in conjunction with the conference. In addition, winners will give a presentation on their research at QPRC, which will be held in Tempe, Arizona, from June 14–16.

The scholarship is funded by the Mary G. and Joseph Natrella Scholarship Fund and the Quality and Productivity Research Conference.

Eligibility

Application is open to students who are pursuing a master's or doctoral degree full-time in an accredited college or university. The student must have a demonstrated interest in quality applications as evidenced by course work, research topic, or prior work experience. Applicants will receive equal consideration regardless of age, color, creed, disability, ethnicity, gender, marital status, military status, race, or sexual orientation. Students who have previously received the Natrella Scholarship are not eligible to apply again.

Selection Criteria

The Natrella Scholarship Award Committee will select scholarship recipients based on the following criteria:

- Teaching and mentoring
- Engagement and experience in statistical applications
- Service and leadership in the statistics community

The following secondary criteria also will be considered:

- Authorship and research
- Academic performance and scholarship
- Community service outside of the profession

Important Dates

The deadline for registration is April 1. The application deadline is April 15. Scholarship recipients will be selected by May 1. Scholarships will be awarded at the conference banquet on June 14.

To download the application form, or for more information about the award, visit *http://bit.ly/1RHlxdH*. For information about QPRC, visit *http://bit.ly/1PtXhp2*. ■

Ellis R. Ott Scholarship

The Statistics Division of the American Society for Quality is offering $7,500 scholarships to support students enrolled in or accepted into a master's degree or higher program with a concentration in applied statistics and/or quality management. This includes the theory and application of statistical inference, statistical decision-making, experimental design, analysis and interpretation of data, statistical process control, quality control, quality assurance, quality improvement, quality management, and related fields.

Qualified applicants must have graduated in good academic standing in any field of undergraduate study. Scholarship awards are based on demonstrated ability, academic achievement, industrial and teaching experience, involvement in student or professional organizations, faculty recommendations, and career objectives.

Application instructions and forms can be downloaded from the statistics division website at *http://asq.org/statistics/about/awards-statistics.html*.

Forms for the 2015–2016 academic year will be accepted until April 1. For more information, contact Lynne B. Hare at *lynnehare@verizon.net*. ■

Deadlines and Contact Information for ASA National Awards, Special Lectureships, and COPSS Awards

Deadlines and Awards	Nominations	Questions
March 1, 2016		
ASA Edward C. Bryant Scholarship	Pam Craven *pamela@amstat.org*	Pushpal Mukhopadhyay *pushpal.mukhopadhyay@sas.com*
ASA Excellence in Statistical Reporting Award	Pam Craven *pamela@amstat.org*	Morteza Marzjarani *mortkm2@yahoo.com*
ASA Fellows	*www.amstat.org*	J. Jack Lee *jjlee@mdanderson.org*
ASA Mentoring Award	Pam Craven *pamela@amstat.org*	David R. Morganstein *davidmorganstein@westat.com*
ASA Outstanding Statistical Application Award	Pam Craven *pamela@amstat.org*	DuBois Bowman *dubois.bowman@columbia.edu*
March 15, 2016		
ASA Founders Award	Pam Craven *pamela@amstat.org*	David R. Morganstein *davidmorganstein@westat.com*

sectionnews

Biometrics

Edited by Sheng Luo, Biometrics Section Publications Officer

Want to get more involved in JSM? Consider volunteering to chair a session. Chairing a session is an important responsibility and a great way to meet your colleagues. If you are interested, contact our section's 2016 program chair, Jeffrey Morris, at *jefmorris@mdanderson.org*.

Postdoctoral Opportunities

We invite applications for funding to support career-development efforts for assistant professors or associate/full professors interested in moving into a new research area. We are particularly interested in applications that will result in a benefit to the broader research community. For example, funding could support attendance at a workshop to receive additional training in an applied research area typically underserved by biostatisticians that could benefit from more rigorous research methods through biostatistical support and expertise.

We will accept applications from individuals interested in receiving additional training or from individuals or groups interested in recruiting biostatisticians for training in a specific underserved research area.

We anticipate funding up to two proposals this year, with total funding of up to $5,000 per proposal to be spent within the next 1.5 years. Applicants must be ASA and Biometrics Section members at the time of submission.

A one-page application, due by February 29, should be in the following format:

- Summary of Request
- Significance and/or Rationale
- Budget

Expenditures are restricted to domestic travel and the cost of meeting attendance. A funding period with a start date no earlier than April 1, 2016, and an end date no later than August 31, 2017, also should be specified. Recipients will be expected to submit a brief report within one month of the conclusion of the project.

Applications should be submitted by email to Biometrics Section chair, Debashis Ghosh, at *debashis.ghosh@ucdenver.edu*. ■

Government Statistics

Submitted by Jill Montaquila, GSS Past Chair

Looking for data? *Data.gov* is a one-stop resource for the U.S. government's open data—federal, state, and local government and university-collected data on topics ranging from agriculture to energy to public safety. There is a general search box (useful when the name of the target data set is known), as well as the ability to filter by location, topic, topic category, data set type, tag words, format, organization type, organization, and/or publisher. The website provides metadata on each data set, along with links to the data and the agency/organization providing the data set. It also contains a list of (and links to) apps that use the U.S. government open data, including product recall apps and the Alternative Fueling Station Locator, College Affordability and Transparency Center, and Home Energy Saver. ■

Physical and Engineering Sciences

Greg Piepel, SPES Industrial Speakers Program Chair

The SPES Marquardt Memorial Speakers Program—established in the early 1990s to encourage careers in applied statistics—facilitates visits of experienced applied statisticians to colleges and universities to give seminars and meet with students and professors. SPES reimburses the host institution up to $1,000 to cover the expenses of the speaker's visit.

Speakers provide information to students about (i) what an applied statistician does; (ii) how they solve problems in science, engineering, technology, and business; and (iii) what nontechnical skills are required to be successful as an applied statistician.

Institutions interested in having a speaker or SPES members interested in being on the speakers list (or working directly with a local institution to set up a visit) should contact Greg Piepel at *greg.piepel@pnnl.gov* or (509) 375-6911. ■

To list your sections' news in *Amstat News,* send an email to managing editor Megan Murphy at *megan@amstat.org* with the details.

Highlights from the 11th International Conference on Health Policy Statistics:

Statistical Science at the Forefront of Health Policy Research

Kelly H. Zou and Recai M. Yucel, Co-Chairs

The 11th International Conference on Health Policy Statistics (ICHPS) conference was successfully held from October 7 to 9, 2015 in Providence, Rhode Island, in the United States (U.S.). Under the overall theme "Statistical Science at the Forefront of Health Policy Research," the conference was sponsored by the Health Policy Section of the American Statistical Association (ASA) and co-chaired by Kelly H. Zou and Recai M. Recai. The ASA issued a press release to the media prior to the start of the conference.

Throughout the past 20 years, the ICHPS has played a vital role in the dissemination of statistical methods in health policy and health services research. The ICHPS has fostered a great tradition of linking methodologists with health policy-makers to add focus and perspective to the development of new tools.

Among many enthusiastic long-time and new participants and attendees of ICHPS 2015, arriving from 8 different countries including those traveling from Australia and United Kingdom, there were 246 registrants, reflecting the "international" nature of the conference.

The cutting-edge scientific program was both gem- and jam-packed. It included 10 workshops, 10 invited sessions, 4 topic-contributed sessions, 4 contributed sessions, 2 general sessions including 2 keynote speakers, a plenary speaker, 2 poster sessions, 3 HPSS major achievement awards, as well as an off-site Student Travel Award celebration over a fabulous and eclectic collection of seven statistician musicians.

The first keynote speaker, Gail Wilensky is a distinguished economist and senior fellow at Project HOPE, an international health foundation. The second keynote speaker, Marc Berger is Vice President of Real World Data and Analytics at Pfizer Inc. The plenary speaker, Constantine Gatsonis is the Henry Ledyard Goddard University Professor at Brown University, founding director of its Center for Statistical Sciences, and founding chair of its department of biostatistics.

Among the health-policy issues spotlighted during sessions at ICHPS 2015 were the following: big data approaches for health policy; comparative effectiveness research; health data confidentiality — past, present and future; improving medical decision-making in the era of personalized medicine; meta-analysis and evidence-based medicine; measurement, implementation and interpretation of patient-reported outcomes; quality performance analyses; social network analysis with applications to medicine and health policy; statistics and payment reform: toward better value in health care; the medical expenditure panel survey: a national data resource to inform health policy. A major highlight was an invited session on the advances in non-experimental causal inference methods for patient-centered health services and health policy research, organized by Elizabeth ("Liz") Stuart, a member on the Advisory Panel on Clinical Trials of the Patient-Centered Outcomes Research Institute (*http://www.pcori.org*).

Hearty congratulations go to Constantine Gatsonis of Brown University and Donald ("Don") Hedeker of the University of Chicago; winners of the HPSS Long-Term Excellence Awards. Special congratulations also to Liz Stuart of the Johns Hopkins University Bloomberg School of Public Health for winning the HPSS Mid-Career Award. There were 15 Student Travel Award recipients. The HPSS recognized 9 members who became ASA Fellows in 2014 or 2015.

We are thankful for the generous funding sources to partially and financially support this conference were provided by several corporations, ASA, the Agency for Health Quality and Research, under grant (#R13HS024210), and generous private donations made by a number of contributors. Acknowledgment goes to Chapman and Hall/CRC Press for donating books.

Eight statistician musicians played a fabulous and an eclectic set of music and songs at a Student Travel Award Ceremony and Social Networking Entertainment Event. The Imposteriors performed along with three guest musicians.

The co-chairs for the 12th ICHPS, to be held in 2018, are Laura Lee Johnson and Madhumita ("Bonnie") Ghosh-Dastida. They may be reached at *ICHPS2018@gmail.com*. ■

MORE ONLINE
View photos of the event at the magazine's website: *http://magazine.amstat.org/blog/2016/02/01/ichps-2*

March

1–4—12th German Probability and Statistics Days 2016 - Bochumer Stochastik-Tage, Bochum, Germany
For details, visit *www.gpsd-2016.de* or contact Sabrina Wolf, Dufourstr. 15, Leipzig, International 04107; +49 341 24 05 96 – 79; *swolf@eventlab.org.*

***2–4—CoDA 2016: Conference on Data Analysis, Santa Fe, New Mexico**
For more information, visit *cnls.lanl.gov/coda* or contact Kary Myers, 824 Dunlap St., Apt B, Santa Fe, NM 87501; *karymyers@gmail.com.*

16–18—International MultiConference of Engineers and Computer Scientists 2016, Hong Kong
For more information, visit *www.iaeng.org/IMECS2016* or contact IAENG Secretariat, Unit 1, 1/F, 37-39 Hung To Road, Hong Kong, International HK; (852) 3169-3427; *imecs@iaeng.org.*

28–29—International Conference and Expo on Cataract and Refractive Surgery, Atlanta, Georgia
For details, visit *cataract.conferenceseries.com* or contact Claire Hatton, 2360 Corporate Circle, Suite 400, Henderson, NV 89074-7722; (888) 843-8169; *clairehatton01@gmail.com.*

28–29—World Bioinformatics 2016, Valencia, Spain
For more information, visit *bioinformatics.conferenceseries.com/registration.php* or contact Kathaline Lewis, 2360 Corporate Circle, Henderson, NV 89074-7722; (702) 508-5200; *worldbioinformatics@omicsgroup.com.*

29–30—7th World Cardiothoracic Meeting, Atlanta, Georgia
For more information, visit *cardiothoracic.conferenceseries.com* or contact Steve Rogers, Hilton Atlanta Airport, 1031 Virginia Ave., Atlanta, GA 30354; (702) 508-5200; *cardiothoracic@conferenceseries.com.*

April

1–2—Information-Theoretic Methods of Inference, Cambridge, United Kingdom
For details, visit *www.american.edu/cas/economics/info-metrics/conference/Info-Metrics-Spring-2016-conference.cfm* or contact Arnob Alam, 4400 Massachusetts Ave., NW, Washington, DC 20016; (202) 885-3770; *info-metrics@american.edu.*

***5–8—SIAM Conference on Uncertainty Quantification, Laussane, Switzerland**
For details, visit *www.siam.org/meetings/uq16* or contact James Berger, Box 90251, Durham, NC 27708; (919) 684-4531; *berger@stat.duke.edu.*

18–20—4th International Conference on Blood Malignancies and Treatment, Dubai, United Arab Emirates
For details, visit *bloodmalignancies.conferenceseries.com* or contact Shelena Ashley, 2360 Corporate Circle, Suite 400, Henderson, NV 89074-7722; (888) 843-8169; *ishelenahere@gmail.com.*

SAVE THE DATE

Conference on Statistical Issues in Clinical Trials

This year's conference, to be held April 13 on the University of Pennsylvania campus in Philadelphia, will offer a broad discussion of adaptive clinical trial designs, focusing on what we have learned about their advantages and disadvantages, how to optimize their use, and pitfalls to avoid in their operation. Speakers and panelists will include statisticians, clinicians, and bioethicists with experience in adaptively designed trials.

Participants from academic institutions, industry, and government agencies with an interest in clinical trials methodology are encouraged to attend.

Speakers: Frank Bretz, Novartis Pharmaceuticals; Lisa LaVange, FDA; Max Parmar, University College London; Michael Proschan, NIAID; Peter Thall, MD Anderson Cancer Center; Bruce Turnbull, Cornell University

Panel Discussants: Jason Connor, Berry Consultants; Angela DeMichele, University of Pennsylvania; Valerie Durkalski-Mauldin, MUSC; Steven Joffe, University of Pennsylvania; Lisa LaVange, FDA; Janet Wittes, Statistics Collaborative.

For details, contact Catherine Smith at *Smithcat@upenn.edu* or (215) 573-2728.

May

***1–3—28th Annual Kansas State University Conference on Applied Statistics in Agriculture, Manhattan, Kansas**
For more information, visit *www.k-state.edu/stats/news/conference.html* or contact Jo Blackburn, 101 Dickens Hall, 1116 Mid-Campus Drive North, Kansas State University, Manhattan, KS 66502; (785) 532-0511; *jablack@ksu.edu*.

5–7—2016 SIAM International Conference on Data Mining, Miami, Florida
For more information, visit *www.siam.org/meetings/sdm16* or contact Nicole Erle, 3600 Market St., 6th Floor, Philadelphia, PA 19104; (215) 382-9800; *erle@siam.org*.

23–25—61st Annual Meeting of the Brazilian Region of the International Biometric Society (RBras), Salvador, Brazil
For more information, visit *www.RBras2016.org* or contact Paulo Rodrigues, Federal University of Bahia, Salvador, International 40170110; +557193749078; *paulocanas@gmail.com*.

25–28—12th International Conference on Order Statistical Data, Piraeus, Greece
For details, contact George Iliopoulos, 80 Karaoli and Dimitriou St., Piraeus, International 18534, Greece; +302104142406; *geh@unipi.gr*.

June

»6–8/12—2016 MBI Undergraduate Summer Research Program, Columbus, Ohio
For more information, visit *http://mbi.osu.edu/education/summer-undergraduate-program* or contact Tony Nance, 1735 Neil Ave., Columbus, OH 43210; (614) 292-4220; *tony@mbi.osu.edu*.

»8–10—SIS 2016 - 48th Scientific Meeting of the Italian Statistical Society, Fisciano, Italy
For details, visit *meetings.sis-statistica.org/index.php/SIS2016/home* or contact Marcella Niglio, Via Giovanni Paolo II, 132, Fisciano (SA), International 84084, Italy; *mniglio@unisa.it*.

6–10—Statistical Challenges in Modern Astronomy VI, Pittsburgh, Pennsylvania
For details, visit *www.scma6.org* or contact Chad Schafer, 5000 Forbes Ave., Pittsburgh, PA 15213; *cschafer@cmu.edu*.

9–10—International Conference on Nuclear Medicine and Radiation Therapy, Cologne, Germany
For details, visit *nuclearmedicine.conferenceseries.com* or contact Amelia Johnson, 2360 Corporate Circle, Suite 400, Henderson, NV 89074-7722; (702) 508-5200; *nuclearmedicine@conferenceseries.com*.

10–11—Advances in Statistics, Probability, and Mathematical Physics: A Conference in Honor of Eugenio Regazzini, Pavia, Italy
For more information, visit *matematica.unipv.it/eugenioconference* or contact Antonio Lijoi, via san Felice 5, Pavia, International 27100, Italy; +39 0382 986220; *lijoi@unipv.it*.

The following events are the latest additions to the ASA's online calendar of events. Announcements are accepted from education and not-for-profit organizations only. To view the complete list of statistics meetings and workshops, visit *www.amstat.org/dateline*.

* Indicates events sponsored by the ASA or one of its sections, chapters, or committees

›› Indicates events posted since the previous issue

12–15—The 25th ICSA Applied Statistics Symposium 2016, Atlanta, Georgia
For more information, visit *www.math.gsu.edu/~icsa* or contact Yichuan Zhao, Department of Mathematics and Statistics, Atlanta, GA 30303; (404) 413-6446; *yichuan@gsu.edu*.

12–18—AMS Mathematics Research Community on Algebraic Statistics, Snowbird, Utah
For details, visit *www.ams.org/programs/research-communities/mrc* or contact Tom Barr, 201 Charles St., Providence, RI 02904; (401) 455-4101; *thb@ams.org*.

13–17—ISBA 2016 World Meeting, Santa Margherita di Pula, Italy
For details, visit *www.isba2016.org* or contact Michele Guindani, Box 90251, Duke University, Durham, NC 27708-0251; (713) 563-4285; *micheleguindani@gmail.com*.

15–18—Second International Congress on Actuarial Science and Quantitative Finance, Cartagena, Colombia
For details, visit *icasqf.org* or contact Jaime Londoño, Cra 27 # 64-60, Manizales, International 170004, Colombia; *jalondonol@unal.edu.co*.

19–22—36th International Symposium on Forecasting, Santander, Spain
For more information, visit *forecasters.org/isf* or contact Pamela Stroud, 53 Tesla Ave., Medford, MA 02155; (781) 234-4077; *isf@forecasters.org.*

***20–23—Fifth International Conference on Establishment Surveys, Geneva, Switzerland**
For more information, visit *www.portal-stat.admin.ch/ices5* or contact Polly Phipps, 2 Massachusetts Ave. NE, Washington, DC 20212; (202) 691-7513; *phipps.polly@bls.gov.*

29–7/1—The 2016 International Conference of Computational Statistics and Data Engineering, London, United Kingdom
For more information, visit *www.iaeng.org/WCE2016/ICCSDE2016.html* or contact IAENG Secretariat, Unit 1, 1/F, 37-39 Hung To Road, Hong Kong, International HK; (852) 3169-3427; *wce@iaeng.org.*

July

10–15—2016 International Biometric Conference, Victoria, Canada
For details, visit *biometric-conference.org* or contact Dee Ann Walker, 1444 I Street NW, Washington, DC 20005; (202) 712-9049; *dawalker@bostrom.com.*

11–12—International Conference on COPD, Brisbane, Australia
For details, visit *copd.conferenceseries.com* or contact Clara Williams, 2360 Corporate Circle, Suite 400, Henderson, NV 89074-7722; (888) 843-8169; *copd@conferenceseries.com.*

***30–8/4—2016 Joint Statistical Meetings, Chicago, Illinois**
For details, contact ASA Meetings, 732 North Washington St., Alexandria, VA 22314; (703) 684-1221; *meetings@amstat.org.*

August

5–8—SIAM Conference on Uncertainty Quantification (UQ16), Lausanne, Switzerland
For more information, visit *http://bit.ly/1lJnNnu* or contact Frank Kunkle, 3600 Market St., 6th Floor, Philadelphia, PA 19104; (267) 350-6388; *kunkle@siam.org.*

11–13—International Conference on Anatomy and Physiology, Birmingham, United Kingdom
For more information, visit *anatomy-physiology.conferenceseries.com* or contact Eva Simons, 2360 Corporate Circle, Suite 400, Henderson NV 89074-7722; (888) 843-8169; *anatomy-physiology@conferenceseries.com.*

»13–20—Assimilating Long-Term Data into Ecosystem Models, Land O'Lakes, Wisconsin
For more information, visit *www.paleonproject.org* or contact Jody Peters, 294 Galvin, Notre Dame, IN 46556; (574) 631-2175; *peters.63@nd.edu.*

17–19—Small Area Estimation Conference 2016, Maastricht, The Netherlands
For details, visit *www.sae2016.nl* or contact Bart Buelens, CBS-weg 11, Heerlen, International 6401 CZ, Netherlands; +31455706000; *sae2016@cbs.nl.*

22–23—5th International Conference on Computational Systems Biology, Philadelphia, Pennsylvania
For more information, visit *www.systemsbiology.conferenceseries.com* or contact Mark Twain, 2360 Corporate Circle, Suite 400, Henderson NV 89074-7722; (888) 843-8169, *systemsbiology@omicsgroup.com.*

September

***28–30—2016 ASA Biopharmaceutical Section Regulatory-Industry Statistics Workshop, Washington, DC**
For more information, visit *www.amstat.org/meetings/biopharmworkshop/2016* or contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; (703) 684-1221; *meetings@amstat.org.*

October

»14–16—International Conference on Statistical Distributions and Applications (ICOSDA 2016), Niagara Falls, Canada
For details, visit *people.cst.cmich.edu/lee1c/icosda2016* or contact Felix Famoye, Department of Mathematics, Mt. Pleasant, MI 48859; (989) 774-5497; *felix.famoye@cmich.edu.*

20–22—Women in Statistics and Data Science Conference, Charlotte, North Carolina
For more information, visit *www.amstat.org/meetings/wsds/2016* or contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; (703) 684-1221; *meetings@amstat.org.*

November

9–13—International Conference on Questionnaire Design, Development, Evaluation, and Testing (QDET2), Miami, Florida
For more information, visit *www.amstat.org/meetings/qdet2* or contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; (703) 684-1221; *meetings@amstat.org.*

December

»*4–9—72nd Annual Deming Conference on Applied Statistics, Atlantic City, New Jersey
For more information, visit *www.demingconference.com* or contact Walter Young, 16 Harrow Circle, Wayne, NJ 19087-3852; (415) 819-8884; *demingchair@gmail.com.*

6–8—The 15th Conference of International Association for Official Statistics (IAOS), Abu Dhabi, United Arab Emirates
For details, visit *www.iaos2016.ae* or contact Kris Olarte, 9F Dubai World Trade Centre Building, Sheikh Zayed Road, Dubai, International 124752, United Arab Emirates; +971 4 311 6359; *kris.olarte@mci-group.com.*

2017

February

***23–25—2017 American Statistical Association Conference on Statistical Practice, Jacksonville, Florida**
For more information, contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; (703) 684-1221; *meetings@amstat.org.*

July

»*29–8/3—2017 Joint Statistical Meetings, Baltimore, Maryland
For more information, contact ASA Meetings, 732 N. Washington St., Alexandria, VA 22314; (703) 684-1221; *meetings@amstat.org.* ■

Professional Opportunity listings may not exceed 65 words, plus equal opportunity information. The deadline for their receipt is the 20th of the month two months prior to when the ad is to be published (e.g., May 20 for the July issue). Ads will be published in the next available issue following receipt.

Listings are shown alphabetically by state, followed by international listings. Vacancy listings may include the institutional name and address or be identified by number, as desired.

Professional Opportunities vacancies also will be published on the ASA's website (*www.amstat.org*). Vacancy listings will appear on the website for the entire calendar month. Ads may not be placed for publication in the magazine only; all ads will be published both electronically and in print.

Rates: $320 for nonprofit organizations (with proof of nonprofit status), $475 for all others. Member discounts are not given. For display and online advertising rates, go to *www.amstat.org/ads.*

Listings will be invoiced following publication. All payments should be made to the American Statistical Association. All material should be sent to *Amstat News*, 732 North Washington Street, Alexandria, VA 22314-1943; fax (703) 684-2036; email *advertise@amstat.org*.

Employers are expected to acknowledge all responses resulting from publication of their ads. Personnel advertising is accepted with the understanding that the advertiser does not discriminate among applicants on the basis of race, sex, religion, age, color, national origin, handicap, or sexual orientation.

Also, look for job ads on the ASA website at *www.amstat.org/jobweb.*

California

■ The University of California, Riverside (UCR) invites applications for a faculty cluster hire for up to 5 tenured or tenure-track faculty appointments. The goal of the cluster hire is to significantly increase UCR's capacity to conduct high quality interdisciplinary population health research. Application materials for the assistant professor position should be submitted through: *https://aprecruit.ucr.edu/apply/JPF00511* Senior applicants should apply through : *https://aprecruit.ucr.edu/apply/JPF00510*. EOE.

Indiana

■ Director, Biostatistics Cancer Center Core and Cancer Biostatistics Division (level commensurate with experience/qualifications), Department of Biostatistics/IU Schools of Medicine and Public Health, Indianapolis campus. Required: Strong background in methods and collaborative research, strong leadership skills, PhD in biostatistics, statistics or related field; excellent communication skills. Competitive salary/excellent benefits. Interested candidates should visit *http://faculty.medicine.iu.edu/jobs* to apply. Indiana University is an EEO/AA employer, M/F/D.

Michigan

■ The department of biostatistics at the University of Michigan is seeking applicants for a tenure-track faculty position for fall 2016. Candidates must have a strong research background with a doctoral degree in biostatistics, statistics, mathematics, the computational sciences or a related field. Candidates will be expected to develop an outstanding research and teaching program. Details are available at: *www.sph.umich.edu/biostat/faculty-research/job_postings.html*. The University of Michigan is an affirmative action/equal opportunity employer. Applications from women and minorities are welcomed and strongly encouraged.

Missouri

■ A full-time nontenure-track assistant teaching professor position, department of mathematics and statistics, Missouri University of Science and Technology, to start in fall 2016. A doctoral degree in statistics (or mathematics with extensive statistics coursework) is preferred, a master's degree with a strong statistics background and experience teaching undergraduate statistics beyond an introductory level will be considered. Job details and application procedure are given at *http://hr.mst.edu/careers/academic*. Missouri S & T is an AA/EEO institution. Females, minorities, and persons with disabilities are encouraged to apply. Missouri S&T participates in E-Verify. For more information on E-Verify, please contact DHS at (888) 464-4218.

North Carolina

■ Assistant professor of biostatistics, University of North Carolina at Charlotte (*www.unccedu*). Nine-month, tenure-track position is the department of public health sciences (*www.publichealth.uncc.edu*). PhD in biostatistics by August 2016 required. Electronic applications only: *www.jobs.uncc.edu* (position # 004715). For questions contact the Search Committee Chair, Jim Laditka (*jladitka@uncc.edu*). We actively seek applicants who can contribute to our University's Diversity Plan (*http://diversity.uncc.edu/diversityplan/CampusDiversityPlan.pdf*).

Ohio

■ The division of biostatistics in the college of public health at The Ohio State University invites applications for a clinical track associate/assistant professor level faculty position. This

position emphasizes teaching, student advising, curriculum development, and collaborative or methodological research interest. PhD in statistics, biostatistics or related area required. See *http://cph.osu.edu/facstaff/employment-opportunities* or email *BiostatSearch@cph.osu.edu* for details. The Ohio State University is an equal opportunity employer.

Oregon

■ The Oregon State University Department of Statistics invites applications for two open-rank 9-month tenure-track faculty positions, starting September 16, 2016, one of which is anticipated to be at the senior level. These positions will contribute data science research and the new graduate online data analytics program. For additional information, go to *https://jobs.oregonstate.edu* and search posting #0016307. Apply by January 2, 2016, for full consideration. Oregon State University is an Affirmative Action/Equal Opportunity employer.

Pennsylvania

■ Fox Chase Cancer Center invites applications for a faculty position in a growing biostatistics and bioinformatics group. The position encourages collaboration and scholarly investigation into innovative methods and experimental designs in clinical trials, molecular biology, and cancer prevention/control. PhD in biostatistics or closely related discipline plus excellent communication and computational skills, required. Prior biomedical experience, preferred. Send cover letter and CV to Arlene Capriotti (*Arlene.capriotti@fccc.edu*). Fox Chase Cancer Center is an Equal Opportunity Employer..

■ The statistics department at the Fox School, Temple University, seeks internationally renowned scholars with excellent track records in research, teaching, external funding and dissertation advising for a senior faculty position, in fall 2016. Candidates are expected to maintain a rigorous research program. A research focus on Big Data with interdisciplinary applications/collaborations is desirable. Salary is highly competitive and commensurate with qualifications. Visit *www.fox.temple.edu/cms_academics/dept/statistics.* EOE.

Texas

■ The University of Houston, Clear Lake invites applications for a tenure-track position in statistics, beginning in fall 2016, at the rank of assistant professor. The successful candidate should have a PhD by the time of appointment and is expected to teach 9 hours in regular semesters; conduct scholar research; and contribute service to university community. For more information, please see *www.uhcl.edu/sce/stat* for details. EOE.

■ Assistant professor in statistics. The department of mathematics and statistics at the University of Houston, Downtown is inviting applications for one full-time, tenure-track position in statistics at the rank of assistant professor. To be considered a candidate for this position, an application, resume, and cover letter must be submitted online at *http://jobs.uhd.edu/postings/1828*. This is a security sensitive position; complete background investigation is required. AA/EOE.

International

■ The Chinese University of Hong Kong, Shenzhen, is a research-intensive university established through a Mainland-Hong Kong collaboration, with campus and infrastructure provided by the Shenzhen government. The school of science and engineering now invites applications for faculty positions in all related fields: statistical science, data science, mathematics, bioinformatics and genomics, financial engineering and quantitative finance. Please visit *www.cuhk.edu.cn/Zhiwei/index189.html* (Ref.2015/085/01) for details. EOE ■

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When the Powerball drawing soared to 800 million in January, *Wired* asked ASA member and statistician Jeffrey Miecznikowski what the odds were of winning. He replied, "The odds are equivalent to flipping a coin 28 times and getting heads every time." When we shared his quote on Twitter, we received the following responses:

N. J. Burkett • @njburkett7
Thanks @AmstatNews for your expert guidance on #Powerball odds. As a public service and tribute to you I'm starting the hashtag #Buy1Ticket

Sarah Faulkner• @MsFaulknerAHS
Will have to check this fact in AP Stats tmrw. Ironically this is the correct chapter to be on this question.

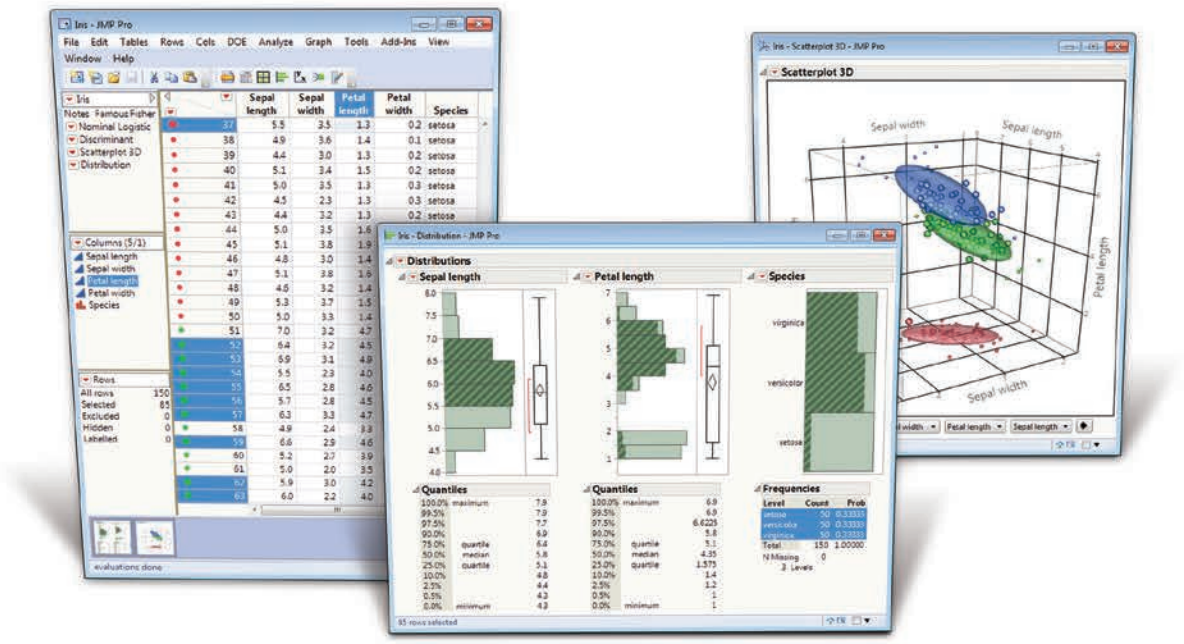
ISCC • ISCC_IU
Skip the #Powerball and work on your research for a real reward!

ISCC • ISCC_IU
Reminds me of @rgouldinPalms intro to stats course!

Next month, we'll ask our followers to answer the question "How would you qualify 'making it' in your #statcareer? Follow us to read the responses or send us one of your own. Don't forget to cc @Amstat News.

In honor of National Mentoring Month, we asked our followers what a mentor did for them. Here is what William Pack had to say:

I simply would not be the professional I am today without good mentors. I've had them at various stages of my development. From some very good, dedicated teachers coming up in the public schools of Jefferson Parish in Louisiana (USA), to my thesis adviser at the University of New Orleans, to a handful of senior engineers at my company, they have imparted wisdom and knowledge borne of their experience in mathematics and the sciences to me. I've also had a couple of really caring supervisors at work who helped me past career plateaus.



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